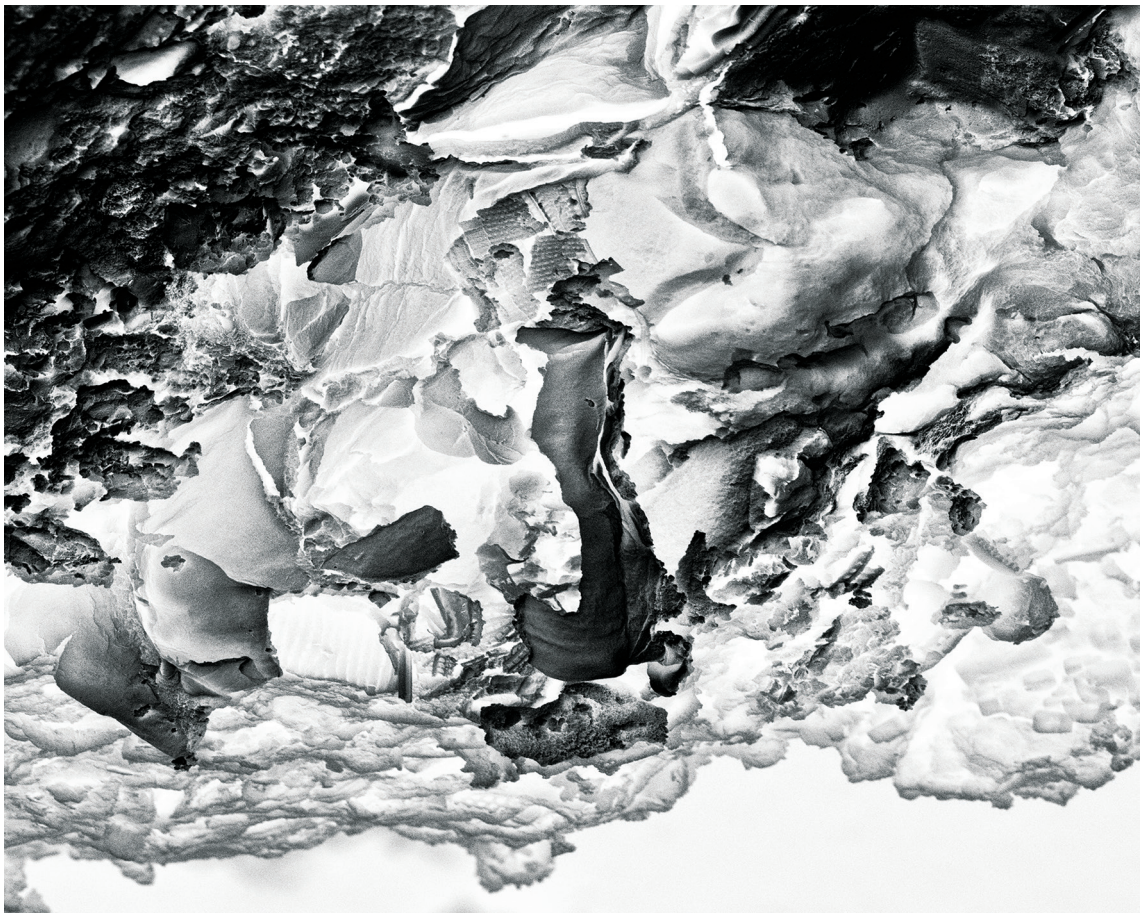
JYU DISSERTATIONS 228

Julius Telivuo

Intensive Technics

Immediate Materiality and Creative Technicity in Gilles Deleuze's Philosophy



UNIVERSITY OF JYVÄSKYLÄ
FACULTY OF HUMANITIES AND
SOCIAL SCIENCES

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Abstract

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This work examines Gilles Deleuze's concept of intensity and the role of this concept in his philosophy of technology. The work has two main objectives. First, it analyses the role of Deleuze's theory of intensity in his metaphysical system and in his philosophy of technology. Second, on the basis of this theory, it presents an original analysis of the creative potential of technology. The importance of the concept of intensity in Deleuze's philosophy has been acknowledged, but so far, his views on intensity have not been analysed in terms of a consistent theory. Furthermore, the implications of Deleuze's theory of intensity for his and Félix Guattari's analysis of technology have been entirely overlooked. This thesis shows for the first time the pivotal role of intensity in Deleuze's philosophy and demonstrates the importance of the concept of intensity for the analysis of technicity.

Part I explicates Deleuze's theory of intensity. For Deleuze, intensity is the nature of the gradual variation of material, heterogeneous wholes. Within such wholes, intensity characterises variation in processes of individuation and systemic transformation. Moreover, these intensive processes and transformations take place within a sphere of material immediacy. Part II fleshes out the implications of this theory for a philosophy of technics. It proposes a definition of technics as immediate interaction with material variation. Technics always has an established role as a component of a particular social system, but it also bears a constant undercurrent of creative and transformative potential. Finally, the current dominance of information technology and the potential for technical creativity in contemporary society are examined on the basis of the analysis of intensive technics.

The work offers an original and comprehensive analysis of Deleuze's theory of intensity and demonstrates his contribution to the philosophy of technology. It also clarifies the processual nature of materiality and the nature of systemic transformation. Finally, it offers conceptual tools for fathoming the constraints as well as the creative potential of technics in contemporary culture.

Keywords: metaphysics, philosophy of technology, philosophy of systems, intensity, technics, technicity, machinicity, materiality, individuation, creativity, Gilles Deleuze, Félix Guattari

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Tutkielmassa selvitetään Gilles Deleuzen intensiivisyyden käsitettä ja sen roolia Deleuzen tekniikan filosofiassa. Työllä on kaksi päätavoitetta. Se pyrkii ensinnäkin osoittamaan intensiivisyyden käsitteen keskeisen roolin Deleuzen metafyysisessä järjestelmässä ja tekniikkaa koskevassa ajattelussa. Toisena tavoitteena on intensiivisyyden teoriaan perustuva uudenlainen analyysi tekniikan luovasta potentiaalista. Kommentaareissa on aiemminkin huomioitu intensiivisyyden käsitteen tärkeys Deleuzen filosofialle, mutta tähän mennessä Deleuzen intensiivisyyttä koskevia näkemyksiä ei ole tutkittu yhtenäisenä teoriana. Lisäksi Deleuzen intensiivisyysteorian merkitys hänen ja Félix Guattarin tekniikan analyysin kannalta on jäänyt täysin huomioimatta. Tämä tutkielma osoittaa ensimmäisenä intensiivisyyden keskeisen roolin Deleuzen filosofiassa ja sen tärkeyden tekniikan analyysin kannalta.

Osa I esittelee Deleuzen teoriaa intensiivisyydestä. Deleuzen mukaan intensiivisyys luonnehtii olennaisesti materiaalisten, heterogeenisten kokonaisuuksien asteittaista variointia eli vaihtelua. Tämän intensiivisen vaihtelun ominaisluonne näyttäytyy erityisesti yksilöitymisprosesseissa ja systeemisissä muutoksissa. Lisäksi intensiivisyyden näkökulma jäsentää näiden prosessien ja muutosten välittömän materiaalisuuden luonnetta. Osa II esittelee tämän teorian merkitystä tekniikan filosofian kannalta. Tekniikka määritellään siinä välittömänä vuorovaikutuksena aineellisen varioinnin kanssa. Tekniikalla on aina vakiintunut rooli tietyn yhteiskunnallisen järjestelmän osasena, mutta tekniikassa piilee myöskin jatkuva luomis- ja muutosvoiman pohjavire. Tekniikan intensiivisyyttä koskevan analyysin pohjalta osan II lopussa analysoidaan informaatiotekniikan nykyistä yhteiskunnallista hallitsevuutta ja toisaalta tekniikan luovaa potentiaalia nykykulttuurissa.

Tutkimus tarjoaa kattavan ja uudenlaisen analyysin Deleuzen intensiivisyyden teoriasta ja tuo esiin sen tärkeyden tekniikan filosofian kannalta. Tutkimus selventää materiaalisuuden olennaista prosessuaalisuutta ja systeemisten muutosten luonnetta. Se tarjoaa käsitteellisiä työkaluja, jotka auttavat ymmärtämään tekniikan rajoituksia mutta myös sen luovaa potentiaalia.

Avainsanat: metafysiikka, tekniikan filosofia, systeemifilosofia, intensiivisyys, intensiteetti, tekniikka, teknisyys, koneellisuus, materiaalisuus, aineellisuus, yksilöityminen, luovuus, Gilles Deleuze, Félix Guattari

Acknowledgements

The spark for the theme of intensity came from working on my master's thesis, where I analysed Deleuze's theory of ideas in *Difference and Repetition* and its background in Kant's philosophy. Intensity as the nature of immediate sensation and materiality seemed central to Deleuze's philosophy and full of potential. In my PhD project, I first sought to formulate the role of intensity in the material dynamics of natural phenomena as a kind of metaphysics of the natural sciences. However, ultimately, it also seemed necessary to address the practical implications of this theory of intensity. The theme of technicity opened such a path: technology is profoundly involved in scientific practices, and it also manifests the operative and transformative nature of the intensive realm of material potentials. Moreover, I noticed that intensity was embedded in Deleuze and Guattari's analysis of technicity and machinicity. Technicity is an evident, albeit constantly changing, part of contemporary society and culture, but its specific, material mode of being has remained largely unthought. Indeed, technics and materiality may seem foreign and unsuitable for thought, but this is precisely the hallmark of a topic worth thinking.

In 2013, I was accepted as a doctoral student in philosophy at University of Helsinki. From 2015 onwards, I continued my doctoral studies at the Department of Social Sciences and Philosophy at the University of Jyväskylä.

I express my profoundest thanks to my supervisor, professor Sara Heinämaa, who has given me her constant support regarding all possible aspects of the thesis project, and also full freedom concerning the research topic. I am also grateful for her thoughtful comments on the introduction and conclusion of the thesis, which gave them firmness and solidity. Her broad-minded approach to philosophy and her extensive philosophical expertise provided a fruitful environment for developing and testing ideas at their nascent stage. Professor Heinämaa also organises the Phenomenology Research Seminar, which has been the ideal forum for acquiring constructive feedback from colleagues. She has also given me several academic work opportunities, most importantly by inviting me to the organising committee of the conference 'Materialisms and Materialities', held in 2013.

I also want to thank professor Susanna Lindberg, who has supported and encouraged my academic endeavours in many ways over the years. She introduced me to Deleuze's philosophy during my undergraduate studies, and also supervised my master's thesis. During my doctoral studies, she has invited me to several academic events, to a conference in Paris and to reading seminars in Helsinki. Her own research on the philosophy of technology has spurred my confidence in the importance of this thematic.

I thank professor Fredrika Spindler and professor Daniel W. Smith for reviewing my thesis, as well as for their helpful comments and encouragement. Smith has also kindly agreed to act as the opponent at my doctoral defence in Jyväskylä.

My doctoral studies have included spending some time abroad. Before my actual doctoral studies, I had already in 2012 been accepted as a cotutelle doctoral student in Paris 1 Panthéon-Sorbonne, with David Lapoujade as my supervisor. However, in the end, the cotutelle could not be arranged. I thank Lapoujade for helping at this early stage and also later in 2019, when the Department of Social Sciences and Philosophy in Jyväskylä awarded me with a travel grant. The staff at the doctoral school in Paris, L'École doctorale de philosophie de l'Université de Paris 1, were always very helpful, M. Ramine Kamrane in particular. I also participated in the colloquium 'Journées doctorales' of the doctoral programme. I warmly thank my friends Robin Zimmermann and Éric Arthot for their hospitality during my visits to Paris. In 2013, I received a travel grant from the University of Helsinki for participating in a Deleuze conference in Lisbon. In 2014, The European Humanities University in Vilnius and the research community 'Subjectivity, Historicity and Communality' (SHC) kindly invited me to the conference 'Sharing Experience: Norms, Values, and Interactions'. I thank in particular Feroz Mehmood Shah for our discussions during the conference. This event also spawned an article in the journal *Topos*. In 2015, I was invited to the conference 'Communautés Techniques' jointly organised by the University Paris 10 Ouest Nanterre La Défense and by the Institut finlandais in Paris. This event encouraged me to adopt technicity as a central theme of the thesis. I thank professor Anne Sauvagnargues, Jean-Hugues Barthélémy, Vincent Beaubois and Mitchell Harper for our inspiring conversations.

As I mentioned above, the most important academic setting for developing my ideas has been the Phenomenology Research Seminar, organised by professor Heinämaa, where I have always received thorough and constructive feedback. I want to thank the whole community, in particular Olli Aho, Jussi Backman, Petri Berndtson, Tuukka Brunila, Marko Gylén, Mirja Hartimo, Martta Heikkilä, Juho Hotanen, Minna-Kerttu Kekki, Kristian Klockars, Tua Korhonen, Anniina Leiviskä, Susanna Lindberg, Hanna Lukkari, Timo Miettinen, Harri Mäcklin, Irina Poleshchuk, Simo Pulkkinen, Joni Puranen, Erika Ruonakoski, Joona Taipale, Risto Tiihonen, Sanna Tirkkonen, Jaakko Vuori, Fredrik Westerlund and Hermanni Yli-Tepsa.

I thank professor Gabriel Sandu for supporting my post-graduate studies at the beginning. I also participated in his doctoral seminar of philosophy in Helsinki. The seminar sessions were always insightful and constructive. Another important academic forum for the development of the thesis was the doctoral seminar in Jyväskylä, led by Jussi A. Saarinen. There was always a delightful atmosphere in the seminars and the great variety of topics demonstrated the department's broad conception of philosophy. I want to thank in particular Kaisa Kärki for her comments on my work. The course on research ethics given by Senior Lecturer Petteri Niemi provided another important academic community in Jyväskylä.

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prompt assistance during the whole process. Guillaume Collett did an excellent job copy-editing the work, by effortlessly enhancing its English while showing a deep understanding of the context in Deleuze's philosophy and of the original French terminology.

During my doctoral studies, I have also had the opportunity of developing my pedagogical skills. I was one of the supervisors of Lauri Myllymaa's master's thesis at the University of Jyväskylä; this was a very useful experience. Before I had received funding for my PhD project, I acquired pedagogical competence by completing the STEP programme at the University of Helsinki. I thank all my STEP colleagues, in particular the philosopher fraction formed by Tommi Hanhijärvi and Johannes Länsiö and also their mentor Daniel Weyermann, who have provided an open-minded forum for trying out ideas. Tommi Hanhijärvi made helpful comments on the manuscript before its submission to review.

This thesis would not have been possible without funding from various foundations and institutions. The Finnish Cultural Foundation gave me my first grant in 2014, as well as my penultimate grant in 2019 which allowed me to prepare the thesis for pre-examination. In 2015, I received a grant from the University of Jyväskylä, at the beginning of my studies there, as well as in 2020, for the final stages of the project. As a member of SHC, I received two grants in 2015 and in 2016 from the University of Helsinki. From 2016 to 2017, there was a gap in funding, during which I had to focus on teaching. Fortunately, the gap was followed by two grants from Kone foundation in 2017 and 2018. It was during this period that the thesis acquired its final outline. I am grateful for all the financial support I have received. The gaps in funding made its necessity tangible; it was extremely difficult to engage in serious research without the possibility of doing it full-time. Funding was far from continuous, but in the end, it did give me complete academic freedom in my research, which I value greatly.

When my PhD project lacked funding, I was fortunately able to work as a philosophy teacher at the European School of Helsinki (ESH). I thank the whole staff for a warm atmosphere, many friendships and important work experience, which broadened my perspective on the themes of my thesis. I am grateful to Lauri Calonius and Jaakko Pitkänen for our collaboration on a textbook of philosophy for upper secondary school. I thank Kai Eriksson for the opportunity of publishing my first peer-reviewed article in his *Verkostot yhteiskuntatieteissä* from 2013. For many years, I have been a member of the editorial board of the Finnish philosophical online encyclopaedia *Logos*, which has broadened my philosophical knowledge in unexpected ways.

The writing of a doctoral thesis requires an expedient, peaceful workplace. I want to thank the Finnish National Library for providing me with a desk and a shelf for several years. The National Library has great collections, which include surprisingly many of Deleuze's references. I thank the amicable and helpful members of the staff. The library also provided me with a small research community. I thank Kasper Kristensen for enlightening discussions on Spinoza and other topics, and also for showing me the way to the Matrix. I also thank Lauri Kallio, Aliisa Nummela, Marco Piasentier and Fredrik Westerlund for their company over the years. In Paris, the Bibliothèque Sainte Géneviève by the Panthéon has been an stimulating place to

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I want to thank my oldest friend Valter Filosof, who has brought not only his friendship but, through his lofty surname, also philosophy into my life at a very early age.

I am grateful to the family of my partner, Lotta Nelimarkka, in particular to her parents, Esa and Ritva for their kind help and support with our children.

I express my most heartfelt gratitude to my loving parents, my mother Irma Telivuo and my late father Matti Telivuo. I thank my mother's partner Hannu Koskinen for his warm presence in our family. I am happy to share a common universe of reference with my two sisters Lea and Suvi, which includes our shared love of music.

Most of all, I thank my wife Lotta for her love and for enduring this strenuous and time-consuming activity of thesis writing and also for occasionally listening to me rambling on about Deleuze. Lotta also draws the most irresistible comic-strip philosophers I have ever encountered. Our two daughters, Aurora and Lilian were both born during the process of writing this work. Aurora even helped me by writing one of the words in this thesis: 'philosophy'. I dedicate this work to you, Lilian and Aurora.

Helsinki, 1 June 2020

Abbreviations

I will use the following abbreviations for Gilles Deleuze's own works and for the works co-written with Félix Guattari. The abbreviations are listed here in alphabetical order, together with the title and year of publication, and the same information for the English translation. Full bibliographical information for all these works can be found in the bibliography at the end of this work.

AO	*L'Anti-Œdipe : Capitalisme et schizophrénie* (1972, with Guattari) (*Anti-Oedipus: Capitalism and Schizophrenia*, 2004)
B	*Le bergsonisme* (1966) (*Bergsonism*, 1988*a*)
C1	*Cinéma 1 : L'image-mouvement* (1983*a*) (*Cinema 1: The Movement-Image*, 1986)
DR	*Différence et répétition* (1968*a*) (*Difference and Repetition*, 1994)
DRF	*Deux régimes de fous. Textes et entretiens 1975–1995* (2003*a*) (*Two Regimes of Madness. Texts and Interviews 1975–1995*, 2006*b*)
FB	*Francis Bacon : Logique de la sensation* (1981*a*) (*Francis Bacon: The Logic of Sensation*, 2003*b*)
ID	*L'Île déserte. Textes et entretiens 1953–1974*, (2002) (*Desert Islands and Other Texts*, 2004)
LS	*Logique du sens* (1969) (*The Logic of Sense*, 1990*b*)
MP	*Mille plateaux : Capitalisme et schizophrénie 2* (1980, with Guattari) (*A Thousand Plateaus: Capitalism and Schizophrenia 2*, 1987)
PES	*Proust et les signes* (2nd ed., 1971 [1964]) (*Proust and Signs*, 2008)
PLB	*Le pli : Leibniz et le baroque* (1988*b*) (*The Fold: Leibniz and the Baroque*, 2006*a*)
PP	*Pourparlers, 1972-1990* (1990*c*) (*Negotiations*, 1995)
PSM	*Présentation de Sacher-Masoch : Le froid et le cruel* (1967) (*Masochism: Coldness and Cruelty*, 1989)
QP	*Qu'est-ce que la philosophie ?* (1991, with Guattari) (*What Is Philosophy?*, 1994)
SPE	*Spinoza et le problème de l'expression* (1968*b*) (*Expressionism in Philosophy: Spinoza*, 1990*a*)
SPP	*Spinoza : Philosophie pratique* (1981*b*) (*Spinoza: Practical Philosophy*, 1988*c*)

Contents

Introduction

This thesis discusses Gilles Deleuze's theory of intensity and the role of intensity in his philosophy of technology. The thesis has two main objectives. On the one hand, it seeks to provide an interpretation of Deleuze's theory of intensity from the perspectives of his metaphysical system and of his philosophy of technology. On the other hand, it presents an original analysis of the creativity of technology, drawing on a reading of Deleuze and other prominent philosophers and historians of technology.

These two tasks will be carried out in two steps. The first part of this work provides a comprehensive interpretation and explication of Deleuze's theory of intensity. The second part presents an original argument concerning intensity and its role in technics. The idea that technology should be understood in the light of the concept of intensive materiality is only implicitly present in Deleuze and Guattari's own work and it has been completely overlooked in the secondary literature concerning their work. Thus, my thesis will open a new perspective on Deleuze's philosophy and at the same time develop a novel approach in the philosophy of technology.

Before our analysis of the creativity of technics can begin, I will introduce my key arguments concerning intensity and technics. Furthermore, I also need to question some traditional and commonplace assumptions regarding these phenomena.

Key arguments of the thesis

This work defends seven main arguments. The first four arguments concern the concept of intensity as it is formulated in Gilles Deleuze's philosophy. The remaining three arguments concern the nature of technics. While these last three arguments are also strongly based on Deleuze's philosophy, these arguments nevertheless address questions concerning technics in a more general, systematic framework.

Heterogeneous, individuating intensity

The first four arguments of this work develop the following key aspects of intensity in Deleuze's philosophy: (1) heterogeneity, (2) individuation, (3) systemic transformation, and (4) immediacy.

First, I argue that *intensity for Deleuze is the nature of heterogeneous wholes.* Deleuze's general term for such intensive wholes or groups of elements is 'multiplicity', a concept which must also be discussed in detail. In order to understand the nature of intensive multiplicities more specifically, we need to look into the history of the concept of *intensive quantity* and its complementary concept, extensive quantity.

Studying the history of the concept of intensity, one finds that the nature of *variation* has occupied a central place in the development of mathematics and natural science. It has also preoccupied most great minds in the history of philosophy. However, in the context of philosophy, the nature of variation figures only as a side issue, under the name of *intensive quantity.* This theme of the quantitativity of degrees and gradation would seem to play only a minor role in the history philosophy, at least from the contemporary perspective. Nevertheless, the concept of intensive quantity and related philosophical considerations were intimately linked to the development of differential calculus in the early modern period, which is precisely the essential mathematical tool for representing variation (see Boyer, 1959). More importantly for the purposes of this thesis, the history of the concept of intensive quantity offers

an important background for our discussion of intensity in Deleuze's philosophy and accordingly, we will cite its main stages: (1) Aristotle's consideration of degrees of forms or qualities, (2) the scholastic concept of *latitude of form*, addressing this Aristotelian problematic, (3) Nicole Oresme's model for the analysis of variation in terms of coordinates, (4) Spinoza's concept of degree of power, (5) Kant's theory of intensive magnitudes. In fact, Kant's short passage concerning intensive magnitudes in *The Critique of Pure Reason* was an important inspiration for the Neo-Kantian Marburg School and its leader, Hermann Cohen. Nevertheless, Kant's theory of intensity is the last significant philosophical account of intensity which Deleuze builds on. I would argue that since Kant, Henri Bergson's concept of duration is the most important inspiration for Deleuze's theory of intensity. However, what complicates this Bergsonian influence on Deleuze is that Bergson himself is critical of the notion of intensive quantity, and for this reason his inclusion in the lineage of theoreticians of intensity would not be warranted.

Kant's definition of intensive quantity or magnitude gives us a starting point in explicating Deleuze's theory of intensity. We will compare Deleuze's definition to the Kantian one, according to which *an intensive quantity is a degree, which is defined by its difference from a zero degree*. We will specify the Kantian definition through further characteristics, based on Deleuze's theory of intensity. A key distinction for the purposes of this work is the one between intensive and extensive quantities. With respect to our first argument, we must already complement Kant's definition with a first Deleuzean specification, according to which intensive quantities are degrees within *heterogeneous* variation, while an extensive quantity is based on a unit of measurement, which, by *homogeneous* multiplication, composes a particular extensive quantity.

In order to better understand the gradual nature of intensity intuitively, it is useful to look at three common phrases, which, when taken literally, crystallise the nature of intensive gradation. The first formulation is: *same but different*. This

paradoxical quip articulates the idea of *intrinsic* distinctions or differences within a continuous sphere of similarity, characteristic of intensive quantities. That is, the concept of intensity is a way of making distinctions within a sphere of interiority, within something that is in some sense one and 'the same'. For instance, *heat*, or more exactly thermal energy, forms a single, continuous phenomenon, but yet there are several different temperatures. How can one distinguish between them? This question brings us to the second commonplace formulation: *more or less*. Namely, intensive quantities are distinguished by relations of more and less (more or less warm etc.), even if they do not directly provide a basis for discrete measurements based on extensive units (e.g. an inch). Finally, our third common formulation concerning intensity is the question: *to what degree?* Indeed, the distinct temperatures constitute *degrees* within a continuous range. The answer to the question is given by an intensive quantity (cf. AO, 181). It is also important to note that intensity constitutes a dimension or range, within which a phenomenon can manifest a certain degree of a property, e.g. warmth, speed, pressure etc.

My second argument concerning intensity is that *intensity characterises the potential of a dynamic process.* Namely, intensive quantity essentially characterises variation and processes, where different intensities constitute modifications or modulations. For instance, a river can flow more or less rapidly, and it may consist of several smaller currents and eddies modifying its course. This already brings us to another important characteristic of intensive quantities: they are degrees of internal or intrinsic *variation*. Thus, supposing a continuous process, its modifications are precisely gradual, although the variation can have several dimensions. What is important in this respect is that all modifications of a process are intrinsic to it, precisely as its variations and in this sense, as its degrees.

From the intensive perspective, variation cannot be considered to be merely an empirical matter. Furthermore, in order to follow Deleuze's point of view to the conditions of real phenomena, it is crucial to ask how fundamental such concepts as

'law of nature', 'the mean' and 'average' are as expressions of the essence of material processes. In a Platonistic spirit, these notions turn our attention to transcendent, ideal models, from which real phenomena flow, but constantly deviating from the original source and obscuring it. Instead, if we address material processes in their intrinsic mode of being, I argue that we must accord priority to the perspective of variation. From this point of view, variation is a basic feature of processes, not an exceptional condition.

Furthermore, according to Deleuze, the dimension of intensity is characterised by *potential* or potentiality. However, it is crucial to note that the potentiality of variation is not simply a possibility but completely concrete. Namely, the intensive potential intimately animates the mode of being of the physical elements of the process as well as the mode of being of the external elements affecting it. It is useful to return to our example of the river, where the (intensive) difference of altitude between its source and its mouth and the ensuing potential are essential for the existence of the river and its flowing in the first place. However, the course of the river is also affected by the shape which its bed and banks have taken during its formation. The idea of intensity articulates this coexistence of a potential and its realisation. In fact, we shall see that while actual existence is usually considered to *add* something to its mere possibility, Deleuze claims that the realisation is actually *less* than the potential it implies: the realisation of potential is always a discharge or a fall to a lower degree of potential and of intensive difference.

Moreover, it is important to discuss the difference between the Deleuzean concept of intensive potential and the Aristotelian concept of possibility-potentiality. I will argue that for Aristotle, potential tends towards its actualisation, while for Deleuze, intensive potentiality characterises variation affected by multiple, contingent causes. We shall see that in the Deleuzean context, the determining causes of a variation must be considered virtual, while the potential is a degree of intensive variation.

In the course of my analysis, I will establish that processuality and potentiality are two key features of degrees of variation or intensive quantities. First, I will demonstrate the importance of this view for Deleuze's theory of intensity. However, it is also necessary to contrast this argument with the traditional conceptions of intensity. Namely, the characteristics of processuality and potentiality are not evident elements in these earlier accounts. I will discuss the Aristotelian and scholastic theories, which interpreted intensities as variants of a *quality*, making no explicit reference to the dynamic nature of this qualitative variation. For instance, the different shades of a colour were in some accounts construed in terms of a kind of Platonic participation of a particular coloured thing in the pure form of the colour in various degrees.

Throughout history, intensity has been associated with qualitative properties, but I argue that intensity and quality must be carefully distinguished. First of all, it is important to note that all the phenomenal examples of intensity (heat, colour) are essentially processual, although they also involve qualities as their effects. In this respect, the effects of the conceptions stemming from the scientific revolution in the seventeenth century have been profound. Indeed, this era witnessed the beginning of a systematic processual analysis of all nature, studying gravitational movement as well as the radiation of light and other forms of wave motion. Thus, most traditional 'qualities' and their variation were gradually subjected to systematic studies in processual and quantitative terms. What is essential in this perspective is that intensive variation is understood as having an intrinsic range, where each degree implies the others. From the perspective of such intrinsic variation, the shades of a colour, for instance, do not simply constitute separate qualities independent of one another, but imply one another and are bound together by a single intrinsic logic, according to which the different shades are produced. However, also in this context, we will need to address Deleuze's claim that there is heterogeneity or *differences in kind* between different degrees of intensity.

In order to understand the quantitative nature of intensity, it is useful to consider further the definition of intensive quantity as a distance or difference from a *zero degree*. The distance from a zero degree is first of all involved in the realisation of intensive potential: the realisation of a potential tends towards a zero degree. However, in addition, each intensity is in itself marked by its distance from a specific zero degree. An extensive quantity such as length, area, volume etc. is defined in terms of a unit of measurement, of which a particular extensive quantity is a multiple. By contrast, an intensive quantity is defined in terms of a certain limit or degree zero, from which it is the distance. Consequently, the different intensive quantities can only be compared in terms of their *order* (more or less intense/bright/warm). As we will see, the ordinal nature of intensive quantity also explains the mutual implication of different intensive degrees. Moreover, ordinal implication is the basis for the comparison of degrees of intensity on a scale of more and less, even if these degrees cannot be directly associated with discrete extensive quantities based on a unit of measurement. I argue that it is crucial for an understanding of the Deleuzean concept of intensity that intensity is not a non-quantitative property but manifests an ordinal quantitativity that is more rudimentary than extensive quantities.

In this work, I distinguish two main perspectives on intensity in Deleuze's philosophy: (1) a systemic perspective and (2) the perspective of sensation. Furthermore, I argue that within the systemic perspective there occurs a shift in emphasis from genetico-dynamic processes to transformable multiplicities. Deleuze's theory of *individuation* develops the systemic perspective of intensity in terms of generative, dynamic processes. A full appreciation of his theory of individuation requires a discussion of Gilbert Simondon's philosophy, on which Deleuze's theory is largely based. Spinoza's philosophy is another important source of inspiration for Deleuze's theory of individuation. In this respect, particularly important is Spinoza's idea of the degree of power or potency as an individuating factor, which Deleuze interprets as an intensive quantity. As we will see, Deleuze also adopts several other ideas

from Spinoza's philosophical system and develops them within his own philosophy of intensity.

In addition to the genetico-dynamic perspective, we must also consider a later Deleuzo-Guattarian perspective on individuation: the intensive potentiality inherent in individuation. In the context of individuation, Deleuze and Guattari signal this shift from a dynamic genesis to a more momentary and punctual form of intensive potentiality with the scholastic term of *haecceity* or 'thisness' (Fr. *heccéité*, Lat. *haecceitas*). A haecceity refers to an individuating potential of a particular moment and of a particular place.

I define intensity as the nature of heterogeneous wholes and argue that this definition captures all the stages of the concept of intensity in Deleuze's oeuvre. However, in order to demonstrate the general applicability of my definition, it is crucial to account for the change in Deleuze's focus from the quasi-teleological dynamic processes discussed in his early philosophy to the transformable multiplicities thematised by his later philosophy, in *A Thousand Plateaus* in particular. This change in focus coincides with the shift from dynamic individuation to individuating *haecceities*. Another important, related conceptual development involves the introduction of the concept of *stratification*, by which Deleuze and Guattari characterise the established patterns of nature, including human culture. I argue that Deleuze and Guattari give the concept of stratification most of the functions that the Simondonian concept of individuation has in *Difference and Repetition*.

My third argument is that *transformations in the mode of being of a system take place in the intensive dimension*. In developing this argument, I question the traditional supposition according to which intensive quantities are indivisible, in contrast to extensive quantities, which can be divided. According to Deleuze, intensive quantities can decrease and increase, but these fluctuations necessarily involve changes in the nature of the system. I will argue that the reverse is also true: all qualitative and heterogeneous transformations in kind require a change in intensity.

In order to understand the intensive nature of systemic transformation, it is crucial to explicate Deleuze and Guattari's concept of *machinicity*. I define machinicity as the operative side of intensive multiplicities. Machines and machinicity characterise the assembling of heterogeneous multiplicities. Consequently, they are key concepts in the analysis of intensive transformations. In this context, we must also explicate the Deleuzo-Guattarian theory concerning *territorial, machinic assemblages* as well as the relation of machinicity to the limiting processes of stratification.

The concept of machinicity will provide the most important link between the themes of intensity and technics. In order to demonstrate this connection in Deleuze's work, we must consider his theory of *synthesis* in connection with Deleuze and Guattari's concept of machinicity. The key role of passive syntheses is to account for the emergence of experience within the intensive realm. I argue that in *A Thousand Plateaus* the concept of machine replaces the concept of passive synthesis.

With the concept of machine, Deleuze and Guattari articulate the idea of inorganic processuality and of openness to such processes, which leads to transformations in a system's mode of being. Accordingly, I emphasise that firstly, the systemic point of view is essential for Deleuze and Guattari and secondly, that these conceptual systems are essentially open. I also argue that their concept of machinicity must not be understood as an abstract metaphor for collective human phenomena. Instead, it is crucial to discuss the implications of the concept of machinicity for our image of technology and concrete, technical machines. Namely, the concept of machinicity opens a viewpoint onto an inorganic processuality between technology and humans, where neither is reduced to its mechanistic or humanistic function.

Fourth, I will argue that *intensity characterises the immediacy of phenomena and material variations*. In order to define this dimension of immediacy more specifically, we must discuss Deleuze's idea that the experience of intensities defies consciousness and is in this sense unconscious or non-conscious (*inconscient*). The immediacy of

intensity is connected to the second branch of Deleuze's theory of intensity, which I mentioned above: in addition to the systemic approach, he also defines intensity as the origin and essence of *sensation*. In this respect, we must distinguish sensation from perception, which for Deleuze is essentially characterised by consciousness and the mediation of concepts. In order to arrive at a consistent theory of intensity, we must also discuss the relation between Deleuze's two main approaches to intensity in his early philosophy – systemic individuation and the immediacy of sensation – and explain how these two approaches can be coherently unified. I argue that Deleuze first seeks to unify the two perspectives on intensity with his theory of passive syntheses and later through the Spinozan concept of *affectivity*. Understanding the concept of affectivity requires an excursion into Spinoza's philosophy and a discussion of his theory of individuation. From this discussion, we will gain an understanding of the Spinozan distinction between essence and existence, crucial for Deleuze and Guattari's concept of affectivity. For Spinoza as for Deleuze and Guattari, affectivity is the essential expression of individuality.

Creative, material technics

My three key arguments on technics build on the arguments concerning intensity and apply their results in the analysis of technics. I analyse the following three aspects of technics: (i) materiality, (ii) creativity, (iii) the homogeneity of information technics. Argument (ii) concerning the intrinsic creativity of technics is the central one, which the other two complement. Accordingly, argument (i) concerning the materiality of technical knowledge offers a necessary context for the discussion of creativity, and argument (iii) concerning information technics is needed for the development of the idea of technical creativity in the context of contemporary reality.

The key insight of this work is the idea that intensity, understood as gradual, intrinsic variation, is the aspect by which material variations are known, followed and harnessed. For this reason, I argue that the intensive aspect of material variations

constitutes the creative basis of technology. In order to understand the specificity of technical creativity, the intensive side of technology must be distinguished from the socially determined, 'technical' side of machines and tools, that is, from machines and tools as parts or elements of social structures, civil engineering and different working environments.

First, I argue that *technics is knowledge of material variations*. Combined with the results already reached concerning intensity and materiality, the argument implies that technics is knowledge of the intensive dimension of things. In order to specify the idea of technics as material knowledge, it is important first of all to distinguish technical knowledge from other forms of knowledge. Furthermore, in this context, we must also discuss Deleuze and Guattari's account of the intrinsic and immediate nature of technical interaction with matter.

In order to understand the importance of the intrinsic, material dimension of technics, it is useful to first contrast it with commonplace assumptions concerning the instrumentality of technology. Technology is usually conceived of as a servant of industries and industrial economy. However, this commonly held conception loses view of the dynamics of technological processes since it focuses exclusively on the results and efficiency of technologies. In this conception, the only possible perspective on the technological process is that of *efficiency*. This means that the mode of being and doing intrinsic to technical processes is overlooked and technology is reduced to a set of means of production and to the promotion of efficiency. Moreover, it is through this perspective of efficiency that technology becomes veneered and financed.

Second, technology is a major object of investment also in scientific contexts, where the economic utility of the investment often seems distant, if not unfathomable. For instance, the annual expenses of the accelerator complex at CERN are around 1billion euros, financed by several national governments. Also, several universities of technology have ample resources to develop machines that produce

temperatures closer and closer to absolute zero (0K).[1] It is possible to argue that in the contexts of scientific research, technological knowledge is pursued as an end in itself, or at least that the economic and industrial perspective is not the primary one. Yet, even in cases where the economic utility of technology is not evident or dominant, technology usually acquires prestige from its scientific affiliation: technology is held in high esteem as a tool for science and as an application of science. From this techno-scientific perspective, technology can only be valuable if it serves scientific theorisation.

In our current situation, technology is primarily conceived as a source of economic utility and growth (in making production more efficient but also by developing novel, more efficient products), but it is also given prestige due to its alleged scientific affiliation. Technological progress is thus taken to consist, first, of industrial-economic efficiency and, second, of the systematic and quantifiable (scientific) manipulability of reality.

However, I argue that what is neglected in the instrumental conception preoccupied with efficiency, is the technicity which is internal to knowledge itself. I claim that we must question the following two opposites in our conception of technical knowledge: at the 'low', pragmatic level, we must question the idea of technical knowledge as mere ignorant tinkering through trial and error; and at the 'high' scientific end, we must question the idea of technology as the savant application of the abstract laws of nature. In contrast to both notions, I claim that technology always involves *a knowledge and mastery of material variations* inherent in the phenomena themselves. Admittedly, it is possible to also arrive at this knowledge and mastery accidentally through aimless groping as well as intellectually, through mathematico-logical reasoning. However, neither the groping that precedes skilful knowledge nor

[1] In fact, today these extremely low temperatures are used to cool down the extremely high temperatures produced in the production process of fusion energy, giving it nominal utility. However, fusion energy itself is not even estimated yet to be in industrial use in the near future. Moreover, an explicit quest for low temperatures has already been on for decades and carried out in a strictly academic context.

the discursive reasoning that may accompany and refine such knowledge should be confused with concrete knowledge of material variations.

In order to understand the reverberations of the materiality of technical knowledge, it is necessary to critically consider the more general but related proposition according to which *all knowledge essentially involves a pragmatic dimension.* To develop this idea, I will discuss the tradition of pragmatism and its epistemological theses which resonate with Deleuze and Guattari's claims. Moreover, I will argue that Deleuze and Guattari's theory of material knowledge is crucial for our understanding and appreciation of the specificity of technical knowledge. I demonstrate that this material perspective is largely neglected in pragmatist epistemology, due to its one-sided interest in the pragmatic dimension of scientific and theoretical knowledge, at the expense of technical knowledge as such.

I argue that *technics necessarily involves a dimension of creativity.* My starting point in the analysis of the intrinsic creativity of technics is Deleuze and Guattari's description of technical creativity as the process of 'following' (*suivre*) material variations or material flows. Such a process of following involves the attentive observation of material variation by tracing the variations and studying the intrinsic structure of the material, or for instance by looking for the material in the first place. However, in spite of its intimate adaptation to material variations, the process of following is essentially active and consists of interaction in novel, experimental ways. Such attentive following must be distinguished from *reproduction*, which Deleuze and Guattari conceive as the characteristic operation of theoretical, representational knowledge (MP, 460–462). I claim that the process of following material variations understood as the creative core of technology must thus be distinguished from two main models of technology: application and mechanisation. First, as we already pointed out above, the idea of application reduces technology to a simple continuation or instrument of scientific theory. Secondly, the mechanistic conception of technics reduces technics to simple, mechanical means of production or to tools. I argue that the cre-

ative, experimental interaction involved in technics addresses precisely the intensive dimension of phenomena and of material variations. In view of the conceptual specification of this creative, material technics we must first of all discuss the concepts of *expressive traits* and *singularities*. These two concepts articulate the idea of the immediate nature of technical knowledge and interaction with material variations. I argue that both expressive traits and singularities belong to the intensive dimension, even if Deleuze and Guattari only characterise expressive traits as intensive.

Furthermore, Deleuze and Guattari's concept of *phylum* allows us to articulate the structure of the contingently evolving material continuum that is involved in technical development. For this purpose, we must discuss André Leroi-Gourhan's work on the prehistory of human technology, which provides the basis for Deleuze and Guattari's account of technical evolution.

In order to understand the character of technical creativity, it is also important to recall the machinic character of experimentation as connective, heterogeneous assembling and openness to inorganic processes. First of all, I argue that technics cannot be understood merely as the subjection of nature to human needs but more fundamentally, technics is a machinic engagement with material reality, which creates new, concrete connections between material elements. Second, the idea of the *inorganic* nature of machinic processes is crucial for understanding the lack of pre-existing models for assemblages. Namely, machinic assemblages lack both the unity of an organism and its internal structure. As we will see, Deleuze and Guattari distinguish the inorganic essentially from *organisms* as organised, autonomous wholes. The inorganic nature of technical creativity is evident in Deleuze and Guattari's example of ancient metallurgy. I argue, however, that a similar intensive and inorganic machinicity is involved in all creativity and transformation. Deleuze and Guattari's notion of machinicity gives us a powerful new way of conceiving technology beyond mere mechanism. In order to understand the problems related to the idea of mechanism, it is necessary to discuss the critiques of mechanistic thought

that Whitehead and Bergson develop, but also Mumford. Indeed, understood as deterministic spatio-temporal sequences, mechanisms would appear to be merely extrinsic features of certain kinds of machines, which need not be taken as constitutive of or essential for the concept of machine. Instead, Deleuze and Guattari portray machines as essentially productive, affective and heterogeneous. That is, it is not so much the internal structure of the machine that is important in the machine and defines its nature. The machine is defined rather by its surface – its user-interface so to speak. For Deleuze and Guattari, the crucial aspects are not the ones that happen inside the machine but the ones that happen on its surfaces: what goes in and what comes out, the output as a function of the input.

By explicating the creative character of technics, Deleuze and Guattari's theory of machinicity thus questions the humanist and 'organic' critiques of machines and technology. The key features of humanist forms of critique are (a) the opposition between technology and life or technology and nature and (b) the persistent notion that technology is responsible for the alienation of human life. By contrast, for Deleuze and Guattari, the coexistence of technology and nature is neither simply harmonious nor simply conflictual. It is precisely the concept of 'inorganic life' that allows us to analyse the coexistence of technology and nature. According to Deleuze, inorganic life is a heterogeneous, connective and transformative process which is manifested in technicity as well as in organic and inorganic nature, only in different ways. The Deleuzo-Guattarian concept of machinicity is the key concept by which we will be able to discuss both the non-mechanistic and non-organic aspects on material processes.

Finally, the analysis of machinicity also allows us to evaluate the dangers and benefits of machines at the level of society. That is, as has been often noted, machines are both a source of novelty and a way of setting limitations on life, a solution to problems but also their source. However, the apparently conflicting functions of limitation, on the one hand, and creation on the other are not diametrically opposed

or negative images of each other. Rather, they are like two modes of action both inherent in machinicity. However, discovering the intensive, creative side of technology does not solve all the problems related to technicity and machines. First of all, the creativity of technics is in itself ambiguous, bearing also destructive potential, as the analysis of the war-machine assemblage will show. Second, this creative side of technics cannot in practice be isolated from its standardising and limiting tendencies. Thus, it becomes important to understand the distinction between the creative and limiting dimensions of technology, as well as the relation between the constructive and destructive aspects of the creative dimension of technology.

However, in discussing technical creativity, it is also crucial to notice the fundamental, dual role of technics discussed by Deleuze and Guattari. According to them, technology is on the one hand always socially determined by the mode of being of the society in which it develops. On the other hand, technology always has its intrinsic dimension of creativity, which evolves contingently, but autonomously with regard to the development of societies.

My final argument concerns Deleuze and Guattari's analysis of the role of technics in contemporary society and capitalism. Here, my starting point is Deleuze's idea that information-based *control* is the characteristic of our contemporary society and the main form in which the use of power appears in it. As an important complementary claim, he also proposes that control is the key instrument of contemporary capitalism. On the basis of these two Deleuzean ideas, I will claim that *a priori homogenisation* is the essential characteristic of this *modus operandi* of capitalism and information-based control. In this respect, it will be important to notice that this homogenisation takes place primarily at the level of *principles*. Namely, at the level of phenomena, control and capitalism are precisely able to register extremely complex and heterogeneous processes, which they thus do not need to homogenise as long as these processes conform to information control at the axiomatic *a priori* level of principles. I will discuss possible alternatives to this homogenising paradigm

and argue that they are primarily provided by the intensive aspect of technics, under which technics appears as a transformative assembling of heterogeneous multiplicities.

Objectives, methods and structure of the work

This doctoral thesis has two main objectives: the explication of Gilles Deleuze's theory of intensity and the analysis of technical creativity on the basis of this theory. Accordingly, the work provides a systematic philosophical interpretation of Deleuze's theory of intensity from the perspectives of metaphysics and philosophy of technology. These tasks will be carried out by employing the characteristic methods of philosophical explication, interpretation and analysis. These involve, most importantly, the methods of argument analysis and concept explication, hermeneutical and critical methods, and the methods of comparative textual analysis. Several philosophical methods are needed since the thesis develops both an interpretation of Deleuze's philosophy and a systematic argument about the nature of technology and our knowledge of it.

The first part of this work develops a comprehensive interpretation and explication of Deleuze's theory of intensity. With regard to the existing secondary literature, this account of intensity has an exceptionally broad scope: it covers all the central aspects of the Deleuzean concept. In the second part, I develop an original argument concerning intensity and its role in technics. This argument is only implicit in Deleuze and Guattari's works and it has been completely overlooked in the secondary literature concerning their work. Thus, the thesis provides a new original approach to Deleuze's philosophy.

Due to the systematic philosophical interests of this work and its focus on Deleuze, I will not discuss the question of authorship of particular terms, concepts or passages in Deleuze and Guattari's joint work. The key reasons for this choice

are the following: (1) Deleuze formulates his theory of intensity explicitly only in his own work *Difference and Repetition* from 1968, prior to the collaboration with Guattari; (2) Deleuze and Guattari themselves considered the question of authorship irrelevant, and strongly emphasised the amalgamate nature of their mutual work; (3) Deleuze and Guattari's joint work is an integral part of Deleuze's own philosophical development. Accordingly, I argue that Guattari's influence on Deleuze's thought can also be detected in his single-authored works written since the beginning of the project *Capitalism and Schizophrenia* in 1972. However, I will indicate the authors of the terms and concepts whenever this clarifies the contexts of their use and meanings.

The work aims at a rigorous and systematic account of Deleuze's original theory of intensity. Deleuze is acutely conscious of the historic backgrounds of the terms and concepts that he adopts, even if he uses them for his own theoretical and critical purposes. The concept of intensity is a case in point. Consequently, it will be necessary to discuss the historic developments and backgrounds of the less well known concepts, but this historical exegesis in this work will be motivated by a systematic framework of argumentation concerning technology. The discussion of the concept of intensity in Part I proceeds in the domain of metaphysics. This discussion has two main objectives. First, I will explicate the mutual relations between Deleuze's concepts. Second, I will clarify how these concepts relate to the concepts of other prominent philosophical authors. The most important sources for the purposes of this thesis are Baruch Spinoza's and Gilbert Simondon's theories of individuation, Immanuel Kant's theory of intensive magnitude and Henri Bergson's theory of duration as well as his critique of the concept of intensive quantity. I will also discuss the history of the concept of intensity and its relation to differential calculus, which was originally inspired by the considerations of intensive quantity. Part II is a contribution to the philosophy of technology. I discuss the role of

intensity in Deleuze and Guattari's philosophy of technology and I aim to show the importance of these considerations for our understanding of technology.

The work is divided into two main parts. The first part discusses Deleuze's theory of intensity. It is divided into three chapters. In the first chapter, I discuss the role of the concept of intensity in Deleuze's early work, until *Anti-Oedipus* (1972), his first joint work with Guattari. In Deleuze's early work, the concept of intensity is deployed in two main contexts: the problem of *individuation* and the immediacy of *sensation*. In order to elaborate the concept of individuation, I also discuss Gilbert Simondon's philosophy, by which Deleuze's theory of individuation is inspired. Another key inspiration for Deleuze in this respect is Spinoza. In the second chapter, I focus on *A Thousand Plateaus*, in which the concept of intensity has several different roles: (1) intensity is still an individuating principle, which Deleuze and Guattari now label a 'haecceity'; (2) intensity also characterises the variation related to *affectivity* – responses and reactions to external stimuli; (3) finally, intensive variation is the essential factor in the dimension of systemic transformation or *deterritorialisation*. I will argue that all these roles of the concept of intensity concern aspects of dynamic, heterogeneous systems and their potential transformations. In the third chapter, I trace the conceptual development from Deleuze's theory of passive synthesis in *Difference and Repetition* to his and Guattari's theory of machinicity in *A Thousand Plateaus*. This change is extremely important in relation to the role of intensity in Deleuze's work. At first, intensity has mostly a genetic role as the source of phenomena, but in *A Thousand Plateaus* it comes to characterise the heterogeneous variation of complex systems.

The second part of this work is divided into four chapters and it discusses the implications of Deleuze's theory of intensity for our understanding of technology and its creativity. In the fourth chapter, I provide a general characterisation of the Deleuzean philosophy of technology and study its relations to other key philosophers and historians of technology of the twentieth century. The fifth chapter comprises

two main themes. First, it discusses the connections between Deleuze and Guattari's writings and pragmatist epistemology and philosophy of science. Second, I discuss the materiality of technical knowledge and the material basis of technical creativity in Deleuze and Guattari's philosophy. In the sixth chapter, I explicate Deleuze and Guattari's idea of the social determination of technology and their theory of machinicity. Finally, in the seventh chapter, I analyse the nature of information technology and its relation to the capitalist mode of operation. According to Deleuze and Guattari, capitalism is fundamentally a homogenising mode of organisation, despite its transformative powers. Deleuze claims that *control* by information-gathering is the dominant form of contemporary power. Furthermore, this form of power is essentially enabled by information technology. At the very end of this thesis, I consider the creative potential of information technology and possible alternatives to it.

Literary sources

The main corpus of this work is the oeuvre of Gilles Deleuze, including his works with Félix Guattari. Two works are of particular importance: *Difference and Repetition* (1968*a*) and *A Thousand Plateaus* (1980). Deleuze's theory of intensity is given its most elaborate formulation in *Difference and Repetition*, while *A Thousand Plateaus* includes Deleuze and Guattari's most extensive discussion of technics. Interestingly, their final joint work *What is Philosophy?* (1991) includes practically no discussion of technology and its social role, but around the same time both authors published important texts discussing the state of contemporary capitalism and the role of technology in it – Deleuze in 'Postscript on Control Societies' (1990*c*) and Guattari in *Chaosmosis* (1992). I refer to Deleuze's original works and to works written with Félix Guattari by abbreviations (see 'Abbreviations', x). Full entries can be found in the bibliography.

A second large group of sources in this work is formed by following Deleuze's references. Concerning the theme of intensity, the most important references are Bergson, Kant and Spinoza. Gilbert Simondon's work is a major influence on Deleuze, first of all due to his theory of individuation, which constitutes the main context for the discussion of intensity in *Difference and Repetition*. Simondon and Bergson are important inspirations and sources for Deleuze's systemic thinking, and for the analysis of relations between different kinds of systems and domains. Another key source in respect of many themes is Spinoza. As we will see, the Spinozan concept of affectivity as the expression of individuality touches many of the themes Deleuze develops in his works.

In their philosophy of technology, Deleuze and Guattari refer to a great variety of philosophers and historians of technology. From Marx, they adopt the emphasis on the socio-economic determination of technology. Simondon's *The Mode of Existence of Technical Objects* is an important contribution to the philosophy of technology. Lewis Mumford's work focuses on the sociological history of technology, but it has also philosophical characteristics. André Leroi-Gourhan is another important source, whose classic work *Gesture and Speech* on human prehistory provides a background for Deleuze and Guattari's account of the evolution of technology. Further important historians of technology for Deleuze and Guattari include Fernand Braudel, Gordon V. Childe and J. F. C. Fuller.

Despite its long history, the concept of intensity has received very little attention since the nineteenth century. Hence, there are only a few modern general discussions of the subject. Anneliese Maier's classic work *Zwei Grundprobleme der scholastischen Naturphilosophie: Das Problem der intensiven Größe, die Impetustheorie* (1968) [1952] discusses the conceptual history of intensive magnitude and of the 'latitude of forms', which was the term that denoted intensive quantity in late scholasticism and the Renaissance. Anne Davenport's work from 1999, *Measure of a Different Greatness: The Intensive Infinite, 1250–1650* is the most recent

comprehensive work on the medieval concept of intensity, but Davenport analyses the concept mainly in its theological context. Also, Elżbieta Jung's article from 2010, 'Intension and Remission of Forms', is a useful introduction to the history of intensity.

Finally, I discuss secondary works on Deleuze's theory of intensity. Because of the relatively recent appearance of his work, we cannot yet speak of a tradition of interpreting his work, even if the quantity of secondary literature on his thinking is already considerable and growing. In fact, most of the secondary work on Deleuze focuses on explaining his work. This is partly also due to the great complexity of Deleuze's style of writing and to the multitude of themes and domains he intermingles. David Lapoujade's *Aberrant Movements: The Philosophy of Gilles Deleuze* (2014) is the most comprehensive presentation of Deleuze's metaphysics, focusing on *Difference and Repetition* and *A Thousand Plateaus*. Pierre Montebello is another accomplished French Deleuzean scholar. His *Deleuze: la passion de la pensée* (2008) is one of the most perceptive and comprehensive introductions to Deleuze's thought. Mary Beth Mader is one of the few scholars to have clarified Deleuze's concept of intensity. Joe Hughes's *Deleuze's 'Difference and Repetition': A Reader's Guide* is a clear and original introductory work on *Difference and Repetition*, particularly for clarifying Deleuze's background in Kant and Husserl and phenomenology more generally. However, I do not agree with Hughes's metaphorical reading of Deleuze. As the metaphorisation of Deleuze's concepts is a common enough error, it will be useful to look at Hughes's readings in detail.

Another large group of Deleuzean writers focus on applying Deleuze's concepts to other domains, but I argue that this work has not as yet produced results that would show new aspects of Deleuze's philosophy, at least from the point of view of this thesis. Pierre Lévy is here an exception, for instance with his Deleuze-inspired article 'L'invention de l'ordinateur' (1989) on the heterogeneous history of computers. Admittedly, it is difficult to survey this group of thinkers, as they do not necessarily

always declare their Deleuzean inspiration. However, a third group of writers seek to develop Deleuze's thought further without compromising his conceptual rigour. The most prominent example of this category is Daniel W. Smith's work, of which *Essays on Deleuze* (2012) is the most extensive compilation so far. Smith's article 'Deleuze, Technology and Thought' (2018) on Deleuze's philosophy of technology is also an important source for this work. Like Smith, Simon Duffy has discussed Deleuze's philosophy of mathematics extensively. Manuel DeLanda (2002) provides a clear and comprehensive account of the scientific theories alluded to by Deleuze. Furthermore, DeLanda has also developed his own 'assemblage theory', based on Deleuze and Guattari's work. Anne Sauvagnargues is one of the few French scholars who seek to move beyond simply explicating Deleuze's work while still engaging with it. The third approach is also the aim of this work, especially regarding the second part on technics. The first part primarily aims at a thorough explication of Deleuze's theory of intensity throughout his oeuvre, which has not been carried out in the secondary literature so far.

Part I

Intensity

Chapter 1

The concept of intensity in Gilles Deleuze's early philosophy: sensation and individuation

In this first chapter of Part I, I will explicate the concept of intensity in Gilles Deleuze's early work, prior to *Anti-Oedipus* (1972). In the second chapter, we shall look at the role of intensity in Deleuze's later work, in particular in his collaboration with Félix Guattari in *A Thousand Plateaus* (1980). The object of the third chapter is to trace the important conceptual shift that takes place between Deleuze's *Difference and Repetition* (1968) and Deleuze and Guattari's *A Thousand Plateaus*. I analyse this shift through the key concepts of passive synthesis and machinicity.

We will begin with a synopsis of Deleuze's thought, allowing us to better situate his theory of intensity within the corpus of his works. After that, we will clarify the notion of intensity as the nature of immediate sensation. We will then consider the immediacy of intensity in a broader sense as characterising all systems from the point of view of *becoming* and of transformational potential. In Deleuze's early philosophy this processual notion of becoming is articulated primarily in terms of

individuation, which takes place in a heterogeneous, intensive space. Thus, I will argue that intensity is not merely a property of perception and sensation, but an *ontological category* that characterises generative and transformative processes and involves a specific mode of being.

I argue that Deleuze's different uses of the concept of intensity in his oeuvre form a consistent continuum, but what varies is a shift in the philosophical motives and interests related to intensity. As has often been noted, in the collaboration with Guattari, the political nature of thought is expressed more concretely and explicitly than in Deleuze's early work. Another way of putting this is that the role of the natural sciences becomes more distant and autonomous from philosophical considerations. However, this is a question of emphasis rather than a radical change, as already in *Difference and Repetition* Deleuze establishes an internal distinction between different approaches within science, which according to him are still immanent to each other. In *A Thousand Plateaus* it simply becomes ever clearer that even 'intensive' science is not the ideal of philosophy, but simply one important instance of transformative and creative thought.

1.1 Synopsis of the stages in Deleuze's thought

In this section, I present a brief overview of Deleuze's philosophical development and of the role of intensity in Deleuze's philosophical system. This overview is necessary in order to get a rough idea of the great variation in Deleuze's use of the concept of intensity throughout his oeuvre. In a nutshell, for Deleuze, intensity characterises sensible materiality in its immediacy but also the processual logic of *individuation*. In what follows, we will get a glimpse of the different conceptual forms these themes take in Deleuze's works. The focus of the section is exegetic, aiming to provide a survey of the multiple contexts where Deleuze uses the concept of intensity so that we can better appreciate the vast scope of this concept and

its different contexts. However, I will also point out some more systematic points concerning intensity, and I argue that the core of Deleuze's conception of intensity remains more or less invariable throughout his work. What changes is rather the problems and contexts within which the concept of intensity is deployed at different stages of his philosophical development.

Deleuze was philosophically active approximately from the early 1960s until the early 1990s and each decade marked a clearly different phase in his oeuvre, albeit there is an undeniable continuum in his works from the late 1960s onwards. Early in his career, Deleuze established himself in the field of the history of philosophy, publishing works on Hume (1953), Nietzsche (1962), Kant (1963), Bergson (B, 1966) and Spinoza (SPE, 1968). He also became famous for his monographs on two literary figures, Marcel Proust (PES, 1964, revised in 1970) and Leopold Sacher-Masoch (PSM, 1967). After these early accounts of other writers, over a brief period he finished two works which established more distinctly his own philosophical system, namely *Difference and Repetition* (*Différence et répétition*, DR, 1968) and *The Logic of Sense* (*Logique du sens*, LS, 1969).

In the 1970s, Deleuze collaborated mainly with Félix Guattari, mostly on the project *Capitalism and Schizophrenia*, spawning the works *Anti-Oedipus* (*L'Anti-Œdipe*, AO, 1972) and *A Thousand Plateaus* (*Mille Plateaux*, MP, 1980). The collaboration with Guattari clearly marked a move into a more provocative and experimental direction, drawing on material from various domains. The collaboration also more clearly involved political and societal themes, which were only implicitly present in Deleuze's earlier work.

In the early 1980s, Deleuze ventured more strongly into the field of aesthetics, writing on Francis Bacon (1981) and two volumes on cinema (1983, 1985). However, it should be clear from the outset that the primary object of these works on art is not to interpret the artworks in question but to develop new concepts and ways of thinking with the help of painting and cinema. Thus, they are primarily philo-

sophical works in their own right and only secondarily studies of Bacon's oeuvre and on films. Around the same time, Deleuze also returned to the study of other philosophers (Foucault in 1986, Leibniz in 1988), albeit now more explicitly using his own idiosyncratic conceptual apparatus in discussing the other thinkers' systems. Finally, Deleuze co-authored *What Is Philosophy?* (*Qu'est-ce que la philosophie ?*, QP, 1991) with Guattari as a synopsis of many core ideas of their mutual work and of Deleuze's own work, but it is also a fresh philosophical opening which introduces several new themes and concepts.

I argue that intensity as the immediate character of material processes and their dynamism is a central motif which traverses all of Deleuze's philosophy. However, it is analysed explicitly only in *Difference and Repetition* and in the other works intensity is usually present only as part of a wider conceptual apparatus, and accordingly, the concept is not specifically thematised. Consequently, in this work I mainly focus on the themes immediately related to intensity and not on the more general context of each of Deleuze's works. The aim of this section is thus to bring forth the diversity of the Deleuzean discussion of the theme of intensity while pinpointing the constant features of the concept in its varying contexts. Thus, we will also gain a more concrete notion of the function and meaning of intensity in Deleuze's thought.

The essential elements of Deleuze's theory of intensity can be found in *Difference and Repetition* and *A Thousand Plateaus*, and Deleuze's later works mainly expound upon and annotate this basic conceptual framework in different contexts. In *Difference and Repetition*, intensity is presented as the nature of immediate sensible reality, within which beings and phenomena are generated and sensed. Thus, intensity characterises dynamic fields of individuation as well as immediate sensation. Although Deleuze does not explicate the relation of these two perspectives, he presents them as instantiations of the same intensive logic. I argue that ultimately, sensation and perception must also be regarded as a mode of individuation and of becoming with its characteristic forms of intensity and extensity.

A Thousand Plateaus showcases a rich framework with regard to the concept of intensity. It takes up the concept of *body without organs* introduced in *The Logic of Sense* and the concept of *machinicity* introduced in *Anti-Oedipus*. In *A Thousand Plateaus*, Deleuze and Guattari also flesh out a theory of *affectivity* which is only latent in the earlier works. Here, their theory of affectivity is developed in a Spinozan context reminiscent of *Expressionism in Philosophy: Spinoza* (*Spinoza et le problème de l'expression*, SPE, 1968). Furthermore, the theme of individuation from Deleuze's early work is radically reformulated in terms of the medieval notion of *haecceitas*, 'haecceity' or 'thisness', which consists of the two dimensions of longitude and latitude, representing (again in a Spinozan vein) respectively the relations between an individual's extensive parts and the intensive variation of the individual's abilities or *affects*.

Deleuzean metaphysics?

A basic ambiguity in Deleuze's philosophy concerns his relation to the tradition of metaphysics. He labelled himself as a 'pure metaphysician', but he clearly also fought against some central conventions in the metaphysical tradition (Villani, 1999, 130). The 'end of metaphysics' became a popular theme around the turn of the twentieth century, first pronounced by Friedrich Nietzsche, who was later echoed by Martin Heidegger. From a very different point of view, this theme was also central to the spirit of the Vienna Circle and Ludwig Wittgenstein.

In the context of the critique of metaphysics since Kant, Deleuze defines traditional metaphysics as a *doctrine of essences* (Deleuze, 1983*b*). That is, metaphysics is a doctrine that views the world in terms of essences and appearances. By contrast, a philosophy without essences conceives of reality as *appearing*, establishing a kind of *phenomenology*. Deleuze argues that before Nietzsche and Heidegger, Hegel already developed his philosophy along these lines and even before him, Kant appears as the starting point for this philosophy as phenomenology. Thus, the classical, metaphys-

ical opposition between appearance and essence is substituted by appearing and its *conditions*. In fact, the solution of the logical empiricists would seem to have consisted in simply discarding essences from the realm of possible things and limiting themselves to appearances as empirical facts, never minding the phenomenology of appearing as such. Admittedly, even in logical empiricism the logical form and relations of propositions have the minimal role of conditions of truth and knowledge, which are characteristically Kantian and phenomenological discourses.

What is Deleuze's own stance towards this critique of metaphysics? He would seem inclined to take the phenomenological and empiricist critiques of essences even further, but nevertheless labels himself as a metaphysician. What Deleuze appropriates from this critical tradition since Kant is the requirement of the *immanence* of the conditions to the conditioned. That is, the condition of a phenomenon is not transcendent to it like an essence, but instead an intrinsic part of the phenomenon. But we can see that if the idea of immanence is taken seriously, the possibility of thought and of metaphysics must already be inscribed or embodied in phenomena – indeed, this is Deleuze's conviction. However, he argues that we must also account for the difference between the condition and the conditioned, i.e. in what sense the condition differs from the phenomenon and is not simply assimilated to it.

Deleuze's solution to this problem is complex, but an essential element in the solution is the mutual *heterogeneity* or *difference in kind* between the genesis of a phenomenon and its actual form or outcome. In *Difference and Repetition*, Deleuze analyses this difference in kind from two parallel perspectives: (1) the difference between the actual being and the virtual basis of its determination; (2) the difference between the extensive individual and its intensive process of individuation. In brief, the virtual consists of differential relations between ideal elements, which determine the *qualities* and *parts* of the actual being. The point is that the virtual consists of relations between elements that are not perceptible in the actual form of the being, for instance genes in the case of a biological individual. On the other hand,

the intensive and the extensive characterise two distinct quantitative and spatial dimensions of the sensible realm, the intensive one constituting the heterogeneous, dynamic space of becoming and the extensive one constituting the homogeneous, static or mechanical space of actual qualities and spatial extensions.

I argue that Deleuze's metaphysical approach consists in analysing and conceptualising intrinsic differences within phenomena, while remaining at the level of these phenomena. However, it is an important aspect of Deleuze's empiricism that he does not reduce experience to the empirical content of conscious, sensuous experience. Thus, he postulates a fundamental heterogeneity in experience without having recourse to a separate, transcendent ground of experience. This is in a nutshell what Deleuze calls *transcendental empiricism*, which defines his philosophical approach in general – *immanence without homogeneity, transcendence without dogmatism.* Can one think beyond the given while staying at the level of phenomena?

1.2 Intensity as the nature and source of the sensible

> For my part, when I enter most intimately into what I call myself, I always stumble on some particular perception or other, of heat or cold, light or shade, love or hatred, pain or pleasure. I never catch myself at any time without a perception, and never can observe any thing but the perception. (Hume, 2007, 252)

What do we encounter when we turn our gaze inwards into *ourselves*? It might be colours, feelings, sounds, sensations of heat or cold, light or shade. In this classic extract from Hume, he approaches 'intimate' empirical or sensual experience as *immediate*, that is, not mediated by concepts, a subject or a self. Furthermore, I argue that this nature of our immediate experience of ourselves characterises our immediate experience of other things as well.

What then is the nature of this immediate experience? Immanuel Kant proposes in the 'Anticipations of perception' from the *Critique of Pure Reason* that sensations or excitations always have a certain degree or intensity (Kant, 1990, A166/B207). This is in fact Kant's *a priori* definition of the real within empirical experience: it has a certain degree, even though prior to sensation we know nothing else about its empirical nature. For Kant, we only possess *a priori* the representations of space and time and the categories of understanding, to which all experience conforms. However, space and time are only the *a priori* forms of experience, independent of real, empirical experience. Still, Kant paradoxically suggests that we do also know something *a priori* about the empirically real: that the sensation always has a certain degree. Whether it be a colour, a sound, a taste, pleasure or pain, the sensation is always more or less intense, it has intensive magnitude or quantity. (Kant, 1990, A166–A169/B207–B211)

The term Kant uses is *Größe*, usually translated as 'magnitude', referring to a particular empirical value of a quantity, e.g. a particular length or a particular degree of temperature. For Kant, quantity (*Quantität*) is a category, presupposing the synthetic, conceptual activity of the understanding, while a magnitude is its empirical counterpart. However, I argue that in this context, the difference between extensity and intensity is more relevant than the one between quantity and magnitude. Namely, intensity and extensity refer to the intrinsic nature of the two types of quantity and to their difference in kind, while the distinction quantity/magnitude depends on whether quantity is considered as a concept or as its empirical instantiation. Thus, I will speak of 'intensive quantity' or simply 'intensity' in conformity with Deleuze's usage.

For the purposes of our analysis, important in this Kantian analysis of intensive quantity is his idea that the immediately real in sensation is essentially *intensive*. What this means for Kant is that the real in sensation is primarily characterised by continuous, gradual variation. Also, it is important for Deleuze's analysis that

this immediate perspective of experience is independent of concepts and extensive representations of time and space, which identify and recognise the sensations conceptually *as* something and analyse them into extensive units.

It is by definition impossible to mediate or convey to others this intensity of a sensation. Accordingly, immediate sensations have usually been categorised as subjective due to their raw and ephemeral character. However, it would seem that this is also what constitutes the real, empirical character of sensations and sensuous excitations – something that cannot be contained within our representations although it gives rise to them. Deleuze's approach is to analyse the elements of experience in terms of immanent distinctions between intensive and extensive aspects, instead of conditions of knowledge and truth. Immediate experience is not essentially truer than mediated experience, but according to Deleuze these two dimensions of experience follow different logics. Indeed, the intensive dimension seems inexistent as soon as it is judged on the basis of the logic of the extensive dimension. The key insight is that immediate experience and representations work together or intermingle without losing their autonomous character. Thus, experience should not be analysed exclusively from either point of view (of immediate flux of excitations or of representations) but as a multiple, immanent network of heterogeneous elements and processes, which produce local crystallisations or solidifications without ever completely stopping the generative processes and their interaction.

Deleuze analyses the degrees of sensations or excitations in terms of *intensive quantity*. The concept of intensive quantity has a complex history in both philosophy and physics, starting with Plato and Aristotle. The more philosophical discussion of intensive quantity relates to the problem of whether a quality (e.g. hotness) can in some sense possess a quantity or different degrees. Deleuze summarises this discussion in the following way:

> The problem of intensity or degree plays an important role, especially in the thirteenth and fourteenth centuries: Can a quality, without changing

> its formal reason or essence, be affected by various degrees? And do these affections belong to the essence itself, or only to its existence? The theory of intrinsic modes or degrees is particularly developed in Scotism. (SPE, 173/378, n. 2)

In physics, a distinction is still made between intensive and extensive properties of a system. These properties can be defined in several different ways, but according to a traditional, heuristic definition, extensive properties (e.g. length) are directly measurable, while intensive properties (e.g. temperature) are only indirectly measurable. Indeed, measuring instruments always depend on extensive properties. However, the difficulty of measuring intensive quantities would seem to be only the consequence of a more intrinsic aspect of intensive quantities. Namely, I argue with Deleuze that intensive quantities are what drive the generation of extensive quantities. From this point of view it is only natural that intensities can be measured here and now only by means of extensive quantities.

Extensive quantities increase or decrease depending directly on the size of the part of system that is considered. By contrast, intensive quantity does not follow linearly the extent of the system considered. For instance, any part of a moving object moves at the same speed (intensive quantity) as the whole object. Accordingly, in many cases intensive quantities relate to processes while extensive properties are static.

An intensive quantity is a particular degree within a continuum of variation, differing essentially from *extensive quantities*, based on a unit. Thus, intensive quantity only allows for ordinal comparisons of more and less, while extensive quantities are always based on a unit of measurement, making them discrete and apt for numeric comparisons. For instance, temperature or heat is an intensive quantity, which in its immediacy is not measurable. It is only by means of an extensive representation of the temperature (on a thermometer) that a unit of measurement can be ascribed to it.

Due to their belonging to a range of continuous variation, intensive degrees differ from each other intrinsically or internally, while the realm of extensity manifests external differences. Namely, different intensities, e.g. temperatures, imply one another in a series of concrete implications – even if a higher temperature is not composed of lower temperatures, one can witness their mutual implication when the temperature gradually drops to lower degrees. By contrast, the parts of an extensive quantity are simply its constituent parts, which add up to the whole extensive quantity. Also, in terms of their extensive nature, these parts are independent of each other, they are extrinsic. In the book on Spinoza, Deleuze presents this difference in terms of the 'reason' or 'cause' of a distinction. Intensive, intrinsic distinctions are due to a genetic or productive reason, for instance a change affecting the source of heat. By contrast, extrinsic distinctions are static, based on a mere comparison of extensive parts here and now.

We saw at the beginning of this section how Hume criticised the notion of a simple, unified self by drawing our attention to the changing flux of sensations we find in ourselves. Also for Deleuze, immediate experience is essentially pre-subjective and non-conscious, thus problematising the alleged subjectivity of immediate experience and intensive quantities. Intensity marks precisely the dimension of reality beyond the horizon of representation, which is based on the idea of a conscious subject. Thus, the experience of intensive quantities is not so much un- or subconscious, as independent from the conditions of conscious experience. Indeed, intensities can produce the most striking and gripping experiences, but precisely to this end, they require the absence of the structures of representation, which mould experience into pre-existing patterns and narratives. As Herman Hesse's *Steppenwolf* would have it: 'Intensive life requires the death of the self'. However, I argue that for Deleuze, intensity only requires the death of the conscious self. Furthermore, as we will see in Chapter 3, intensive experiences still entertain a form of passive subjectivity or selfhood in Deleuze's system.

Deleuze already noted in *Bergsonism* that intensive quantity is *that by which the given is given*, that by which the 'data' of our experience become our experience. First of all, the role of intensity as that by which the given is given entails that intensity defines the *transcendental limit* of sensibility. That is, the intensive source of sensation is not sensed in the same way as the sensible objects or contents (qualities and extensions) but can only be sensed forcefully and in an essentially vague manner as *distortions* of the senses. In such situations, normal perceptions become impossible, as for instance in the cases of vertigo or intoxication. Deleuze terms this distorted form of sensibility its *transcendent* use or exercise (DR, 305). Thus, according to Deleuze, the immediate nature of sensing only becomes visible or 'sensible' in itself in limit experiences, not in formal, 'pure' reflection *à la* Kant, which on the contrary is based on the normal, average form of experience.

For Deleuze, the transcendent use of sensibility expresses the 'being of the sensible'. Deleuze describes the intensive sensation as 'the nonsensible which can only be sensed' (DR, 305). This is not simply a paradox, but means that the sensation can only be sensed, though it is not a properly constituted, sensible object. The intensive sensation is not an object of possible experience in the Kantian sense. Also, Deleuze argues that conscious representation is based on the harmony of our different mental faculties: sensibility, imagination, memory and thought. When we see something familiar and undisturbing, this means that we can easily relate to it with each of our faculties. From this point of view, intensity is a pure sensation, which cannot be experienced through any other faculty (imagination, memory, thought). It can only be experienced as a limit which is manifest in distortions of the senses in the ensuing discord of the faculties. However, in this discord we are immediately

affected via our senses and this is ultimately also what provokes us to truly think.[1] (DR, 180–191)

According to Deleuze, our thought is not provoked by most experiences, as our average experiences are very habitual, governed and mediated by regular, adopted patterns of thought and behaviour. Furthermore, Deleuze argues that the organisation of the objects of our experience in terms of qualities and extensions is essentially the product of such patterns. However, Deleuze does not characterise quality and extension as mere imaginary projections, but rather, according to him, they cover up the intensive processes that produce them. Accordingly, an immediate sensation provoking the bafflement of sensibility, and hence of thought, is an intensity coming to the surface. Intensive sensations in their immediacy are necessarily disturbing or overwhelming as in their presence, we have no representational mechanisms to cope with them, as those mechanisms and reactions are at least momentarily halted. (DR, 187–188)

As we have noted, the idea of the immediacy of experience may involve a margin of vague indeterminacy that can be assigned to a subjectivity and to a quality (or quale). By contrast, Deleuzean intensity refers more strictly to an objective, pre-subjective process producing the sensation. Indeed, in his early work, Deleuze strictly distinguishes the immediate intensive sensibility from the extensive experience of qualities. From this perspective, qualities are simple accompaniments to extensive quantities, which express and cancel intensity in the extensive realm (cf. B, 93). Accordingly, the perceived quality of redness necessitates the cancelling or making invisible of the intensive process which produces the colour sensation. It

[1] In *The Logic of Sense*, Deleuze develops the themes of static and dynamic genesis reminiscent of the theme of genesis in *Difference and Repetition*. The static genesis proceeds from a virtual or 'incorporeal' *event* to its effectuation in states of affairs and to its expression in propositions. The dynamic genesis, on the other hand, starts with material, bodily intensities, proceeding towards virtual events and sense. (LS, 217) That is, the dynamic genesis characterises the process whereby linguistic sense is distinguished from what is initially a mere stream of noise, in human prehistory, but also when a child first learns to understand language. Hughes assimilates the static genesis to the actualisation of ideas in *Difference and Repetition*, while the dynamic genesis is according to him analogous with the Deleuzean account of the awakening of thought due to a discord of the faculties (Hughes, 2009, 66; Smith and Protevi, 2018; cf. DR, 238).

is helpful to consider Deleuze as a *process philosopher*, although he himself does not emphasise this processual core of his system. According to Deleuze, there is a transcendental illusion related to qualities and extensions: a quality is always a kind of still frame of the underlying processes (DR, 309). But as befits transcendental illusions, this illusion is inevitable and also well-founded: phenomena do appear as qualities and extensions. Consequently, the objective of Deleuze's transcendental critique of extensity is not the establishment of a fully fledged process ontology denying the existence of anything stable or enduring. Instead, Deleuze analyses the limitations of this representational scheme based on extensive properties and presents an alternative account of the conditions of experience, which acknowledges the role of intensity.

1.2.1 Intensity as the source of phenomena

If intensity gives what is given, how is the given given? I argue that Deleuze emphasises the generative nature of intensity over the perceptive or experiential aspects of intensity and intensive sensations that we have focused on so far. However, as we will see, Deleuze's concept of intensity does always maintain a certain sensible aspect.

According to Deleuze, the non-conscious, intensive character of immediate experience involves multiple layers of processes: neurological, biological, chemical etc. This brings us to an important and unorthodox feature of Deleuze's philosophy: the structures of experience are not distinctly human, but concern all productive, synthetic activities. Deleuze himself gives an open-ended list of the kind of systems he has in mind: 'mechanic, physical, biological, psychic, social, aesthetic, philosophical etc.' (DR, 155). Thus, Deleuze is a process philosopher, but although he construes a general theory of passive syntheses of time that produce all phenomena, including our experiences, according to him, these synthetic processes are not mechanistic or deterministic, nor are they of a single, homogeneous kind to which all phenomena

would be reduced. Thus, for instance our psychic life cannot according to Deleuze be reduced to biological processes, nor yet to physical ones. However, in Deleuze's system, repetitive, unconscious processes take the place of the conscious subject of experience. Still, these repetitive processes, according to Deleuze, do involve a kind of subjectivity, but only *larval subjects*, a concept which evokes the continuation of the repetitive, synthetic process and in particular the continually varying and transforming nature of the process. On the other hand, 'local selves' denote the receptive or 'contemplative' feature of couplings and resonances of the passive syntheses (DR, 155). The larval subjectivity refers to a kind of driving force within a process, while the local self evokes the reciprocal affectivity, receptivity, and communication between the series of differences in a system.

So, our bio-psychic life envelops within itself a host of other forms of life and synthetic, repetitive processes. In *Difference and Repetition*, Deleuze refers to these relations of processes that are folded or nested in one another as 'implication' or 'envelopment' (DR, 329). Indeed, the degrees of this implication are according to Deleuze precisely intensities within a complex variation of different processes. However, the nature of these concrete implications is not strictly hierarchical nor deterministic, while there is a strict order of implication. That is, physical phenomena do not determine psychic phenomena, but the characteristic dynamics of a psychic system cannot affect those of a physical system either. Instead, the different levels of being constitute different modes of repetition and passive syntheses, which are continued on the higher levels. Thus, for instance the psychic process of seeking water to quench one's thirst prolongs and continues the cellular processes in the heart, veins and the brain resulting from the lack of water. The basic physiological process cannot explain the active process of seeking water, but still the conscious, active processes essentially only continue the more basic processes, but at a different level. Most importantly, even if intensity is encountered first through psychic sensation, it characterises the communications of series at all levels. However, this intensive

communication of series takes different forms according to the particular conditions in each field of phenomena.

1.2.2 The unity of the sensible and dynamic dimensions of intensity

Joe Hughes argues that in *Difference and Repetition*, Deleuze discusses intensity essentially from two viewpoints: (1) as pure sensation (or the 'given of transcendental sensibility'); (2) as the determining factor and environment or space of actualisation (or the 'field of individuation') (Hughes, 2009, 149–150).[2] Indeed, we have seen that Deleuze defines intensity as the immediate being of the sensible, while extensity or extension refers to the (discursively) mediated, represented or representable aspect of reality. On the other hand, from the point of view of the actualisation of ideas, intensity is the modality of the production of extensive actualities, while extensity characterises actual objects.

No simple distinction can be made between what Hughes refers to as the sensible side of intensity (sensation, object of transcendental sensibility, the sensible origin of thought) and the actualising side of intensity (genesis of actualities, individuation),

[2] Hughes's commentary (2009) on *Difference and Repetition* deserves our special attention, as it is at the same time an extremely perceptive reading, while its perspective is also marred by a basic unwarranted limitation. The main problem with Hughes's account is that he approaches *Difference and Repetition* as a conditioning or grounding of representation (à la Kant). Consequently, he renounces the Deleuzean engagements with the 'real world' (of natural science but also of our concrete experience) and strangely interprets all the Deleuzean discourse on concrete phenomena and experience as a euphemism for the structures of representation, hence for instance 'everything points to the fact that intensity is cancelled in representation' (Hughes, 2009, 152). In a similar vein, Hughes suggests that both the thermodynamic discussion as well as the Deleuzean deployment of the differential calculus are but 'metaphors' (Hughes, 2009, 150–151, 130). What Hughes fails to notice is that this supposed metaphoricalisation is a symptom of his implicit refusal of the Deleuzean critique of representational thought and of his transcendental empiricism; he misinterprets the notion of immanence by presuming that one can only criticise representationalism via representations (one thinks of Wittgenstein here, always conceiving only a single legitimate plane of language in each context). Instead, Deleuze's basic point of departure is that representations are indeed immanently connected to their objects and their source, but they differ in kind from these objects and can be distinguished from them. Thus, Hughes's readings are often reliable and helpful due to their systematic character, but one must constantly be aware of his tendency to present every aspect of Deleuze' theory as a grounding of our representations.

what I call the *dynamic* aspect of intensity. Rather, the distinction indicates two privileged starting points in a complex, heterogeneous network.

What is the dynamic nature of immediate, intensive sensations? Ultimately, I argue that this dynamic nature follows the logic of affectivity. For Deleuze, affectivity is immediate communication and interaction with our surroundings. What makes the matter more complicated in the anthropomorphic case is that our experiences are almost immediately structured as objects and as their qualities and parts. Accordingly, I argue that intensity is firstly sensation in general in the sense of affectivity. Secondly, in the anthropomorphic, cognitive sense of the immediate, affective level of sense perception, it is covered over by extensive representations.

Also, starting with sensation, intensity characterises the process which produces the sensation, which, if not independent from an observer of some kind, involves a larger generative framework and cannot be constituted solely by reference to the subjective structures or conditions of representation. Indeed, as we saw, Deleuze proposes the expansion of the notions of subjectivity and experience or perception to involve all synthetic activities, be they physico-chemical, biological or cognitive. Accordingly, subjectivity becomes 'larval', denoting the consistency or continuity of the individuation process, or more precisely, its *spatio-temporal dynamisms*, which develop the intensive actualisation of virtual determinations (DR, 155; ID, 136). The larval subject is that to which these dynamisms happen, the soul of the system as it were (e.g. the embryo or larva). Furthermore, the systems are also populated by 'contemplative souls', referring to all the passive syntheses of the underlying repetitive processes (DR, 103).

On the other hand, if one starts from the dynamic, systemic genesis of e.g. a crystal or of an organism, one ends up with the final actual being as a possible object of representation. Thus, although Deleuze stresses the independence of intensive processes from actual, extensive structures and objects, these are still the inevitable outcome of the intensive processes. From the point of view of the actualisation of

ideas, extensity characterises actual experience, whereas intensity is the modality of the production of these extensive actualities on the basis of ideas.

The notion of immediate affection accounts for the seemingly dual nature of intensity as sensation and generative potential: it is the nature of immediate processes involving several interacting series. We will analyse the notion of affectivity in Section 1.8 in relation to Spinoza's philosophy, but for now it is important to note the Deleuzean idea that as the immediate mode of interaction between beings, affectivity surpasses the perspectives of objects and conscious subjects. Accordingly, in the Deleuzean point of view, phenomena should be approached as dynamic systems of variational processes, consisting of heterogeneous, interacting elements. As we shall see later, the Deleuzean theory of affectivity also approaches these processes from the point of view of experience, but affectivity is not confined to this point of view.

1.3 Dynamic systems

What are the main characteristics and elements of the dynamic systems that Deleuze analyses? At this point, it is important to clarify that in all his work, Deleuze seeks to construct an open conceptual system. That is, he tries to create an alternative to the more traditional conception of a system as a closed totality à la Hegel. However, he also sees the construction of a conceptual system as a necessary function of philosophy, without which philosophy cannot hope to have any effect on anything. (PP, 48–49) However, I argue that this openness also applies to the concrete systems that Deleuze and Guattari discuss, not merely their conceptual apparatus. Namely, in the Deleuzean sense, the nature of the conceptual system cannot be separated from the nature of the phenomenon it concerns. Thus, the intrinsic features of conceptual systems – e.g. openness, the relations between its elements – are at work in the system itself. Naturally, concepts and concrete phenomena can be distinguished in an extrinsic, abstract sense, by treating the concept as a representation. However,

Deleuze's point is that when a concept is at work as a mode of thinking in a concrete situation, this distinction cannot be made. I argue that this Deleuzean idea of the immanence of concepts and thinking to experience is the reason why his discourse may have the effect of naive realism: like tools, concepts need to be used in order to function. A concept is an invitation to think in a certain way within a particular system.

I argue that the three main features of the openness of Deleuzean systems are *contingency*, *heterogeneity* and *transformability*. The two features are present in all of Deleuze's work, but transformability as a central dimension of systems is analysed mainly in *A Thousand Plateaus*. As we will see in Section 2.8, Deleuze and Guattari's main concept for systemic transformation is *deterritorialisation*, which is based from their perspective on concrete systems in terms of occupying space, or a territory.

For now, we will focus on Deleuze's account of systems in *Difference and Repetition* and *The Logic of Sense*. First, according to Deleuze, systems are composed of several *series*, which are affected by three operations: coupling, internal resonance and forced movement, which define the dimensions of a system. In addition, a system is occupied by subjects, dynamisms, qualities, extents or extensions and the dark precursor (DR, 156).[3] Thus, the operations concerning the series (coupling, resonance and forced movement) constitute the more structural characteristics of the system, while the other elements compose the more particular nature of the system.

Perhaps the strangest aspect of this 'dynamic systems theory' is its *subjective* element: the passive and local egos and larval subjects. These subjects refer to *passive syntheses* constitutive of different levels of a system. Local, passive egos refer to the

[3] The French term for 'extent' is *étendue* (Lat. *extensum*), which refers to the concrete spatio-temporal extension of an individual thing. However, Deleuze uses the term 'extension' more particularly for the process of extension (Lat. *extensio*) which develops intensity into an extent and into a quality (DR, 294). Extent thus corresponds more or less to the concept of extensive magnitude, but I would suggest that by the term *étendue* Deleuze wants to emphasise the concrete extended aspect of an individual rather than its measurability (cf. DR, 296).

more elementary synthesis of habits and of the present, while larval subjects refer to the third synthesis of transformation. We will discuss the concept of synthesis in greater detail in Chapter 3. At this point it is useful to note that the passive ego is a processual ego – 'a modification' – which is distinct from the material elements involved, but empirically inseparable from them (DR, 107). Deleuze specifies that the passive ego is a process of habit formed by contemplation, while the larval subject is the 'patient of a dynamism', the body to which the dynamism happens (DR, 155).

Let us now briefly consider the operation of the series in a dynamic system. Deleuze defines a series by the differences (of first degree) between its terms: E-E'. The coupling of series establishes differences of a second degree, differences between differences: E-E' and e-e'. The coupling also produces an *internal resonance* between the series, expressing precisely their mutual differences. However, the communication of series may also result in a *forced movement*, overflowing the amplitude of the basic series. (DR, 154–155) In his discussion of Proust from a psychoanalytic perspective, Deleuze assimilates the internal resonance with Eros, the connective and constructive archetype, and forced movement with Thanatos, or the death instinct (PES, 190–192). Further, in relation to time, resonance entails an extreme contraction of the past, while the forced movement constitutes an extreme dilatation of events and things distant in the past. Internal resonance thus refers to the process of fortifying or consolidating certain aspects of the system via resonance, while a forced movement intensifies the processes so as to overflow the system, thus producing a profound transformation. Later, Deleuze and Guattari will refer to this transformative feature or tendency as *a line of flight*. In *Difference and Repetition*, the forced movement accounts for how transformations come about through repetition, from within a particular system. However, the forced movement should not be confused with death, as according to Deleuze, death has two fundamental

dimensions: the death instinct from within, which leads outwards from the system, but also the extraneous aspect, which always comes from the outside.

As for the more specific operations involved in systems, Deleuze proposes for instance *nightmares* as an example of a psychic dynamism. Moreover, larval subjects are the 'supports' of such dynamisms (DR, 155), while passive selves are assimilated to the contemplation of the couplings and resonances between series. On the other hand, the qualities and extents are the outcomes of *explication*, or the two forms of extension. Thus, while these qualitative and extended aspects of the system mark the annihilation of its intensive processes, due to the immanent nature of the systems, Deleuze argues that qualities and extended parts are part of the system, only differing in nature from the intensive processes that produce them.

Finally, in the preliminary analysis of intensive systems, Deleuze confronts the question concerning the origin of the communication between heterogeneous series – 'what is this agent, this force which ensures the communication?' (DR, 156). His answer is the *dark precursor*. The dark precursor is an element in the system which makes two series of potentiality communicate, but it does not belong to either of the communicating series. This triggering element is 'dark', because it is in itself inconspicuous and is shadowed further by the phenomenon it produces. The origin of the concept lies in the electrochemical dynamics of lightning: the visible lightning and the discharge is preceded by the invisible ionisation of the air, creating a kind of path or channel for the lightning to strike through – a 'leader' – advancing in the opposite direction. The dark precursor is thus an invisible, reverse movement, preceding the communication of the series and the actual phenomenon (e.g. the lightning strike). Here it is perhaps useful to note that the dark precursor simply characterises the nature of the contingent onset of a communication between series; it is not properly speaking the origin or sufficient cause of this communication. The elements of the system pre-exist it, e.g. the difference in potential between a cloud and the ground, and the dark precursor only emerges in such a context. Thus, the

origin of the dark precursor itself is an empirical question. The dark precursor is a concept for an event that precedes the phenomena as if in reverse. It is like a sign of a coming event, which however can be noticed only afterwards, if at all.

Now we should be familiar with all the essential elements of Deleuzean dynamic systems of repetition, but what are their actual scope? We noted already that there is a potentially infinite variety of dynamic systems in Deleuze's sense. However, there are a few privileged kinds of systems that Deleuze discusses in *Difference and Repetition* and later on from a different perspective: physical, biological, psychic and aesthetic or literary. In addition to the serial character of systems, they are also essentially characterised by individuation. Thus, the base series of a system are characterised by repetitious, passive syntheses. However, the broader dynamic context is that of the field of *individuation*, which presents a kind of immanent surface for the integration of the heterogeneous processes communicating within the system. '[...] Individuation precedes in principle [*en droit*] form and matter, species and the parts and all other elements of the constituted individual' (DR, 56).

1.4 Individuation and actualisation of ideas

Deleuze develops his account of individuation most extensively in *Difference and Repetition* (1968), as part of his theory of intensity in the book's fifth chapter, 'Asymmetrical Synthesis of the Sensible'. Deleuze proposes two parallel but distinct parts of the process of actualisation of virtual ideas: individuation and differentiation.

What is the purpose of these accounts? The concepts of individuation and of the virtual can be defined in the form of two paradoxes which indicate the main problematic that Deleuze seeks to analyse with these concepts. *Individuation consists of individuality without an individual*, while *the virtual is a groundless grounding of phenomena*. Namely, individuation accounts for the process that creates the time

and space of a phenomenon, but it is not individuated in the sense of a stable object. Thus, Deleuze seeks to articulate a processual consistency or individuality, which is not subjected to the requirements of representation and judgment. How can we account for the origin of a phenomenon without projecting its actual qualities and parts into its origin? How can we study a phenomenon dynamically without pinning down an already individuated, representable object in it? As a general rule, what Deleuze is after in phenomena is a logic of processes, and more generally a logic of *variation*.

On the other hand, by 'virtual ideas' Deleuze refers to the determination of the qualitative and extended aspects of actual phenomena. However, ideas are not themselves actual and do not resemble the phenomena. Furthermore, differentiation (*différenciation*) refers to the generation of the qualities and extensive parts which characterise the product of actualisation on the basis of the genetic elements (virtual, differential relations).

By contrast, individuation entails the emergence of an intrinsic space of individuation leading to this actualised and differentiated product. Individuation thus creates and defines the site of actualisation, where the differentiation of qualities and extensive parts can take place. Accordingly, Deleuze argues that individuation is fundamentally primary with regard to the properties of the actual individual. For instance, in the case of the biological individual, on Deleuze's account, the process of individuation ontologically precedes its specific properties. Thus, he claims that each being is primarily defined by a process of individuation and only secondarily by its qualities and extensive structure, even if these are genetically determined. In a way, for Deleuze, epigenetics precedes genetics. However, it is important to note that this primacy of individuation concerns precisely the field of individuation and individuation as a process, and not the individual as a constituted being.

1.4.1 Intensity as the determining factor in the actualisation of ideas

According to Deleuze, intensity is what draws the relations between the virtual elements of a phenomenon into a process of actualisation. Deleuze develops a concept of idea on the basis of the traditional, Platonic and Kantian formulations of ideas as non-sensible entities underlying our sensuous experience. However, instead of essences or principles, with Deleuze ideas become problematic, relational structures which determine the properties of actual objects and phenomena, or more precisely their qualities and extended parts. In fact, Deleuze combines Plato's and Kant's insights, in that in a Platonic fashion, ideas are real, but following a Kantian formulation, ideas are in themselves problematic or problems. However, in contrast to Kant, Deleuze suggests that the problematic character of ideas is not due to their subjective or conceptual origin but rather he claims that the problematic character of ideas on the contrary defines their objective nature and reality.

In order to fully understand Deleuze's account of the actualisation of ideas, we must contrast it also with Aristotle's concept of *potentiality*. Namely, Deleuze's concept of the virtual can be seen as a double critique of Aristotle's notion of potentiality (*δύναμις*) and its medieval variants. Briefly, Deleuze formulates the virtuality of ideas as a non-teleological potentiality, which determines the properties of the actual being but does not tend or point towards it. Secondly, for Deleuze, *intensity* constitutes another kind of *physical* potential, this time only quasiteleological, or rather, *directional*. The intensive potential is not directed towards the properties of an actual individual, but it is more like a vector or gradient of the development of the individual. Thus, virtuality is potentiality that does not tend towards its actualisation. On the other hand, intensity is potentiality that tends only to cancel itself, and in doing so actualises something else (virtual ideas). One could say that virtual ideas are goals not striven for and the discharge of intensity is a teleological

process without a goal. Deleuze underlines the concrete nature of both of these potentialities, and indeed they both are structures of concrete, empirical experience. However, the determining structures of actual properties are precisely virtual, so by definition they cannot be given in experience as such but can only be attained by thought (hence the term 'idea'). Simply put, we only perceive the properties of an object or phenomenon, but not how they are determined and produced.

Intensity actualises the virtual determinations of an object. It manifests a kind of teleology, but this teleology pertains only to the sensible potentials and is not determined by the virtual determinations. I will elaborate this sensible teleology further on, but for now, suffice it to say that the actualisation of the intensive potential means only the cancellation of particular differences of potential (thermodynamic, electric, chemical etc.) within sensibility. Thus, the different potentials are distributed in a kind of pre-sensible, intensive space, which actualises the virtual determinations embedded in it, but does so by following its own logic, characteristic of the sensible realm. For instance, Deleuze identifies the cytoplasm of a cell as the dynamic, intensive space in which the virtual determinations of the DNA are actualised. Thus, there are two distinct processes intertwined here: the differentiation determined by genes, and the dynamic, cytoplasmic process of individuation making this differentiation possible. Accordingly, I argue that potentiality also takes two forms in this Deleuzean system: first, a virtual and ideal potentiality, which determines actual properties but lacks any teleological thrust towards their actualisation; second, an intensive potential, which is directed towards cancelling itself and thereby actualises the virtual determinations as a kind of side effect.

For instance, in the emblematically Aristotelian case of the acorn, from the Deleuzean point of view, the potentiality of the acorn is not defined in terms of its goal and actualised form (the oak tree) nor as a simple process. Instead, the acorn possesses two levels of potentiality. First, the specific properties and extended parts of the tree are determined by its genetic code. However, the genetic code itself

does not do anything, but it needs the internal space of the acorn as well as the water and warmth of the soil (and thus ultimately of the sun), which will start the process of growing, developing the genetic information. (Cf. Aristotle, 1961, 1050a) According to Deleuze, this ideal determination as such is ineffective and 'impotent' with regard to actual phenomena, as it merely constitutes the virtual material of the qualities and parts of actual beings. Indeed, the virtually determined structure itself remains virtual, not given in actual experience and not tending towards its own actualisation. By contrast, the determination of the actualisation of experience happens within an *intensive field of individuation*.

Thus, primary in the actualisation of ideas is an *intensive space* able to actualise ideas, and ideas only constitute a material for this actualisation (DR, 323). This material, however, has an essential role in the process of actualisation, as it determines the qualities and parts of actual objects. According to Deleuze, the reciprocal, differential relations between ideal, virtual elements primarily determine the qualitative aspects of an individual. Deleuze mentions genes as an example, expressing differential elements which direct the development of a biological individual (DR, 240). Furthermore, the extended parts of an individual are, according to Deleuze, determined by virtual singular points, which correspond to the differential, ideal relations. From the point of view dynamic systems theory, these singular points can also be seen as attractors that mark the locations of e.g. different organs before they have developed.

1.4.2 Virtual ideas and differential calculus

In *Difference and Repetition*, Deleuze borrows his 'differential' vocabulary concerning ideal relations from differential calculus and he incorporates many of its notions into his theory of ideas. In its most basic use, the differential relation dy/dx, or the derivative, represents an *instantaneous rate of change*. Such a subtle quantitative grasp of change and variation has made differential calculus the central tool in all

natural sciences, but also e.g. in economics. In brief, whenever one studies change and variability quantitatively, differential calculus is a vital instrument.

The instantaneous analysis of change requires that the variables (x, y) which represent the phenomenon tend toward zero, and thus become unrepresentable by any definable values. If the variation (e.g. the distance travelled) is represented as a function of a given term (x, e.g. time), the average rate of change (in this case velocity or speed) can be determined as the quotient between the two differences – i.e the interval of distance/interval of time. However, one can go one step further and determine the *instantaneous* rate of variation (i.e. instantaneous velocity) at any given instant. This requires that the studied interval in the variation be arbitrarily small, or indeed approach zero. Thus, formulated in a more philosophical manner, if one grants that any object or phenomenon can be determined as relations of various elements, the ultimate terms of these relations can only be unrepresentable, differential, and consequently ideal elements. Accordingly, 'ideal' here means something real that determines the nature of a phenomenon, but itself has a determinate nature only in relation to other ideal elements. Consequently, the ideal element cannot be experienced nor represented in itself, as it is not actual nor even a possible object of experience.

Thus, differentials are for Deleuze virtual elements or *ideas* determining phenomena. They are in themselves (dx, dy) undetermined, but reciprocally determinable in differential relations ($\frac{dy}{dx}$). This is rather straight forward; to put it simply, Deleuze is saying that phenomena are determined in terms of relations between virtual elements. However, the degrees of these ideal, differential relations ($\frac{dy}{dx}$, $\frac{d^2y}{dx^2}$...) correspond to *singular points*, which define the phenomenon – e.g. the boiling and freezing points of a substance or the points around which organs develop in an organism. In differential calculus, these would be the maxima and minima (or indeed singularities) of a function: the points where the behaviour of the function's graph changes. These singularities thus define the essential characteristics of the

phenomenon, and furthermore, they are determined by the relations between ideal elements.

What is the relation between intensity and virtuality? These concepts are often completely confused with each other in the secondary literature on Deleuze's philosophy, which is most likely due to the shared, pre-representative and non-actual character of both the intensive and the virtual. We will be gradually better acquainted with their mutual relation and difference in the course of this work, but for now it is useful to note their basic difference as well as their principal affinity. Namely, differential relations are utterly nonsensible, while intensities always operate within the sensible – indeed intensity is, according to Deleuze, the being of the sensible. However, singularities that correspond to ideal relations are the virtual points according to which intensity is distributed. This correspondence between intensity and virtual singularities does not remove the difference in kind between the intensive and the virtual, nor does the correspondence between them compromise their autonomy and lack of communication, but it permits us to see the link between them from the point of view of experience. The characteristic features of a phenomenon appear as exceptional intensive differences. These intensive, distinctive features of a phenomenon can be determined as a virtual distribution of singular points, which stand out from a continuum of regular points. Furthermore, these virtual, singular points correspond to the degrees of a differential relation between ideal elements that determine the phenomenon (see LS, 261–62).

Deleuze formulates the difference and affinity between differentials and intensities very precisely in *Difference and Repetition* (DR, 314–15). He alludes to Russell's critique of Hermann Cohen in *The Principles of Mathematics*, where Russell criticises the assimilation of differentials with intensive magnitudes. Russell dismisses both Cohen's conception of differentials as infinitesimal quantities or magnitudes and of intensive magnitudes as infinitesimally small (Russell, 1938, §322–23).

> It is to be observed that *dx* and *dy*, if we allow that they are entities at all, are not to be identified with single terms of our series, nor yet with differences between consecutive terms, but must be always stretches containing an infinite number of terms, or distances corresponding to such stretches (Russell, 1938, §322).

While Deleuze affirms Russell's proposal of distinguishing intensities from differentials, he nevertheless also affirms their affinity and undermines the basis of Russell's critique of Cohen. Namely, according to Deleuze,

> [the affinity of intensities and differentials] must not be based on the consideration of a series, the terms of a series and the differences between consecutive terms, but on the confrontation of two types of relation, differential relations in the reciprocal synthesis of the Idea, and relations of intensity in the asymmetrical synthesis of the sensible (DR, 314–15).

That is, the affinity between the differential and intensive difference does not consist in a resemblance of two types of quantities or magnitudes (differences between terms in a series) but in the communication between two types of relation. Deleuze emphasises the operative nature of this connection by referring to the relations as 'syntheses'. While the differential relation $\frac{dy}{dx}$ expresses the general variability of a function, the partial derivative $\frac{\partial f}{\partial x}$ expresses the rate of change of a particular variable (x) of a multivariate function, the other variables remaining constant. Thus, for Deleuze, the differential relation only involves the virtual, reciprocal coexistence of differential elements, while a partial derivative involves the intensive, asymmetrical relation between actual and virtual elements, tending towards actualisation and integration. (DR, 314–15)

I agree with Hughes's argument that the point of Deleuze's use of differential calculus is not to provide an analysis of mathematical concepts for their own sake.

Instead, I propose that Deleuze uses mathematical concepts to construct a metaphysical theory of the genetic conditions of phenomena. However, I also believe that Hughes strongly understates the importance of the model of differential calculus and indeed of all the scientific theories that Deleuze draws on – Hughes simply labels them as 'metaphors'. But Hughes's metaphorical sleight of hand begs the question: *metaphor for what?* Namely, I argue that the reverse is the case: it is rather the mathematical concept of differential that is a metaphor, while the Deleuzean concept of differential seeks to pin down something real. In order to illustrate this idea, it is useful to cite Boyer's interpretation of the nature of mathematics:

> Mathematics is neither a description of nature nor an explanation of its operation; it is not concerned with physical motion or with the metaphysical generation of quantities. It is merely the symbolic logic of possible relations, and as such is concerned with neither approximate nor absolute truth, but only with hypothetical truth. (Boyer, 1959, 308)

While I argue that Boyer for his part here understates the power of mathematics, this is a useful reminder of the finite and imperfect nature of systems of mathematical notation at any given moment in history. Again, Boyer's proposition begs the question: *why is mathematics so useful if it is only concerned with hypothetical truth*? I argue that with his theory of differential ideas, Deleuze seeks to pin down the real power of differential calculus and the real structural aspects of dynamic variation, of which differential calculus is the most rigorous articulation. More importantly, he uses the concept of differential to articulate the genetic conditions of phenomena beyond the forms of our actual representations. This is the charm and necessity of differentials for Deleuze: they do not appear within our sensible, actual experience and representations, but they furnish the sufficient genetic conditions of this experience, which they completely determine – virtually. This is the key sense of virtual ideas for Deleuze: virtual ideas are conditions of real experience, which do not appear within this experience. Deleuze also describes virtual ideas by using the

expression 'as if': it is *as if* all processes were determined by differential relations. However, this 'as if' is not the expression of hypotheticality but of the virtuality of this ground for determination. Namely, differentials constitute an immanent, genetic dimension of a phenomenon, which, however, can only be determined indirectly.

I argue that with his concept of virtuality, Deleuze is able to avoid the realist/antirealist alternative concerning the metaphysical status of the calculus. That is, differentials do according to him correspond to something real, but this real is not directly perceptible nor representable – from a Kantian perspective, the differentials are not within the sphere of *possible experience*. However, this 'impossibility' does not make differentials merely conceptual or hypothetical, as the reality of differentials inheres in their mutual *relation*, the different degrees of this relation, and the progressive determination of these degrees. In brief, the reality of virtual, differential ideas is invested in the *problems* of which they form the structure.

Boyer points out that the differential relation or the concept of instantaneous velocity has throughout the history of philosophy and mathematics been intuitively associated with the idea of *intensity* or of intensive magnitude (Boyer, 1959, 308). The philosophical ideas associated with the supposed intensive magnitude of instantaneous motion include Aristotle's potentiality, the scholastic impetus, Hobbes's *conatus* and the concept of inertia in modern science. According to Boyer, the problem with these interpretations is that they attempt to assign an intuitive, perceivable quality and dynamism to what is essentially a static, mathematical construction. Namely, during the nineteenth century, the concept of instantaneous change was given a rigorous mathematical formulation, especially in the formulations of Weierstrass and Dedekind. This formulation was based on the concept of limit, which enabled a purely formal and static consideration of the differential relation and of instantaneous change. Consequently, all dynamic and intuitive considerations of intensive magnitudes became superfluous with regard to this rigorous articulation of the differential relation.

However, Deleuze gives a metaphysical interpretation to differentials as virtually real, but at the same time, he also dissociates the differential from its traditional metaphysical interpretation as an intensive, dynamic impetus. Indeed, while he characterises differentials as virtual, intensity constitutes for him another nonrepresentational, nonconceptual dimension within experience. In the mathematical context, Deleuze illustrates this distinction between the virtual and of the intensive by means of the difference between the derivative and the partial derivative. The derivative is a function which expresses the general nature of the variation of another, 'original' function. From the point of view of derivative functions, the operation of integration is usually considered merely as the reverse operation of derivation. By contrast, the partial derivative is employed in solving differential equations by local integration. In fact, the latter case of differential equations is the more usual one in concrete scientific and engineering applications of the calculus: we know the differential equation describing the variational structure of a phenomenon, but the problem is to establish the particular value of the equation by local integration. In this context, Deleuze expresses the difference between virtual ideas and intensities in the following manner:

> Ideas are virtual multiplicities, which are problematic or 'perplex' and made of relations between differential elements. Intensities are implicated multiplicities, which are 'implex' and made of relations between asymmetrical elements, which direct the course of actualisation of Ideas and determine the cases of solution for the problems. (DR, 315)

In Deleuze's metaphysical interpretation of the calculus, the derivative and the differential equation correspond to the virtual, ideal determination of the phenomenon. The partial derivative and the local integration of the function correspond to the intensive sphere of individuation of the phenomenon, which already operates within the sensible realm. Finally, the particular value of the integral func-

tion corresponds to the actuality of the phenomenon, the sensible object of conscious experience. (DR, 314–315)

1.4.3 Individuation and differenciation

As we saw above, there are two kinds of determination at work simultaneously in actualisation: ideal determination of the qualities and extensive parts on the one hand and intensive determination of the process of actualisation itself on the other. In fact, Deleuze uses different names for these dimensions of actualisation: *differenciation* refers to the movement of actualisation from the virtual to the actual, while *individuation* refers to the dynamics of actualisation within the intensive space.[4] Differenciation refers to the particularisation of a being's qualities and parts, whereas individuation takes place in spatio-temporal dynamisms which direct the course of this differenciation.

According to Deleuze, individuation is the 'essential process of intensive quantities' (DR, 317). Thus, it is intensity as an intensive field of individuation that determines actualisation. For Deleuze, the primacy of the individual in the process of actualisation is motivated by the primacy of the sensible or spatio-temporal dynamisms, while these always unfold locally in a concrete system, producing an individual of some kind. However, Deleuze emphasises the importance of distinguishing these genetic processes from processes between actual terms, because the thing to be developed does not yet exist and thus belongs to a different order (cf. DR, 239–240, 324). Furthermore, Deleuze underlines the radical primacy of the dynamic field of individuation as it is only within such a field that any process of actualisation can begin.

A biological example may clarify the relation between differenciation and individuation. In the case of biological ontogenesis (the development from an egg or

[4] Deleuze refers by *différentiation* to the ideal, differential determination and by *différenciation* to the creation of the qualities and parts of actual individuals. For clarity, I shall follow Paul Patton's translation and use the neologism 'differenciation' to mirror the Deleuzean distinction.

zygote to an individual), the cytoplasm forms in Deleuzean terms the intensive field or space in which the extensive form of the individual develops. It is the cytoplasm that creates the individual and spatialises it on the basis of the genetic material. The cytoplasm's dynamic field of individuation actualises or 'incorporates' ideas in the quality (species) and *extendum* or 'extent' (extended parts, organs) of the individual. (DR, 323) On the other hand, the genes in the nucleus form a differential network of ideas or virtual elements, which however only serve as a material for the dynamic field of the cytoplasm. I argue that their ideal reality consists in their 'relationalism', i.e. the fact that their mutual relations which determine the properties of an individual are not as such visible but must be construed. Furthermore, the differential nature of these determining, genetic elements entails that they are defined only in terms of their relations and thus are formless, as they do not possess any individual form.

So, according to Deleuze, intensive quantities are essentially the motor of processes of individuation. He further describes intensive quantities as individuating factors and intensity as the variation or range of degrees inherent to a process of becoming (DR, 317, 58, 310). For instance, all light shares the same basic structure of radiation, but varies in intensity (in a narrower, physical sense), frequency and polarisation. Thus, in the wider sense of intensity, the intensive dimension of light would consist of intrinsic variation according to these variational factors.

Deleuze uses the terms 'intensive quantity', 'intensive difference' and 'intensity' interchangeably and associates all these terms with differences of potential. Intensity defines the realm of intrinsic differences, which differ only by degree. Furthermore, this realm of intrinsic differences is what produces the realm of extensity – extended space characterised by qualities and extensive parts. The main point is that (e.g. physical or biological) individuation is what produces things and it is always based on differences of potential, i.e. intensive differences. On the other hand, individuation is what intensive differences or differences in potential essentially generate. Thus,

intensity is essentially a dynamic and productive difference. For instance, all fuels and all energy is intensive in this sense – they necessarily involve differences in potential which enable them to catalyse or to 'fuel' action.

In sum, intensity is at once difference and individuation – individuating difference and individuation as difference. The virtual subsists as the totality of ideal relations and singularities that determine actual things, while intensity constitutes the particular lines of becoming, developing these virtualities into their respective space-times.

1.4.4 Bergson and Deleuze on heterogeneity and difference

Before we move on with our account of intensive individuation, it is useful to look at the important Bergsonian inspiration in Deleuze's concept of intensity. I argue that this Bergsonian influence appears in two principal forms: (1) in a negative sense, Deleuze's critique of Bergson's analysis of intensive quantity; (2) in a positive sense, Deleuze reformulation of the Bergsonian concept of duration in intensive terms.

Deleuze highlights the Bergsonian analysis of intensive quantity in *Bergsonism* (B) and in *Difference and Repetition* (B, 6–10; DR, 308–09). In fact, Bergson is very critical of the notion of intensive quantities or magnitudes, as for him it results from the poor formulation of the relation of quality and quantity. That is, according to Bergson, the notion of intensive quantity stems from our tendency to think everything in quantitative terms of more and less (differences in degree), even qualities and differences in kind. By contrast, Bergson argues that the differences implied by different degrees of intensity are in reality qualitative differences of *kind* (*de nature*). Thus, e.g. different degrees of temperature would in reality constitute different *qualities* and our notion of them as quantitative degrees on a single, linear continuum would be due to the indirect, extensive representation of temperature on the thermometer.

More generally, Bergson draws our attention to the phenomenon of *duration* (*durée*), which he claims is the intrinsic development of life in all its forms. I argue with Deleuze that the 'vital impetus' (*l'élan vital*) essentially means duration in the context of life (Bergson, 2007 [1907], 11, 53–55, 88; cf. B, 96–97). However, according to Bergson, duration has bifurcated into life and matter, the latter being essentially dead, uncreative duration. Furthermore, through what Bergson calls 'intuition' we are in contact with the durational side of phenomena including ourselves. By contrast, our *intellect* tends to approach reality from the spatial point of view of inert matter. This material perspective gives rise to the concepts of space and quantity, which dominate the intellectual and scientific mindsets. However, according to Bergson, even the concept of time is only 'spatialised' duration, quantified into distinct, homogeneous units. By contrast, the nature and structure of duration would be closer to a musical melody. Namely, a melody forms a qualitative whole which loses its identity when interrupted. Often even the alteration of a single note can make a melody unrecognisable. Thus, the melody does consist of parts which are experienced through time, but these parts are inextricably intertwined so that when isolated, they lose the character they had within the melody (Bergson, 2007 [1889], 74–76).

However, as we have seen, Deleuze proposes a different theory of quantity, suggesting that qualitative wholes are based on intensive quantities, which differ from extended quantities by their heterogeneity. Thus, I argue that intensive quantity and intensity in general is Deleuze's reconceptualisation of Bergsonian duration (cf. Sauvagnargues, 2009, 316–18; DR, 308).[5] In fact, Bergson himself anticipates this intensive interpretation of the concept of duration:

[5] Within his interpretation of Bergson's philosophy, Deleuze also assimilates duration with virtuality (B, 36). However, first of all I argue that this characterisation is close to Bergson's own formulation and thus should not be interpreted as Deleuze's own view. On the contrary, Deleuze describes Bergsonian duration here in exactly the same terms as he does intensive quantity in *Difference and Repetition*. Second, it would seem that there may be both virtual and intensive elements in Bergsonian duration: it is intensive insofar as it appears, but the immanent factors that generate the experience of duration are also virtual in Deleuze's sense.

> True duration, that which consciousness perceives, must thus be reckoned among the so-called intensive magnitudes, if intensities can be called magnitudes; strictly speaking, however, [duration] is not a quantity, and as soon as we try to measure it, we unwittingly replace it by space. (Bergson, 2007 [1889], 77/106)

However, as I have already pointed out, Bergson is critical of the concept of intensive quantity for three main reasons: quantity is a homogeneous, discrete and spatial representation, while duration is a heterogeneous, continuous and indivisible process of becoming. By contrast, Deleuze argues that all these properties, except indivisibility, characterise intensive quantity.

In *Difference and Repetition*, Deleuze takes the Bergsonian analysis of differences in kind and in degree further by formulating another real distinction between the two kinds of quantities: extensive and intensive. That is, if Bergson reduces the difference of intensive and extensive quantities to the difference in kind between quantity and quality, by contrast, Deleuze argues for two different conceptions of degree or part – intensive and extensive. Extensive parts are units, with no definite order (they are homogeneous), while intensive parts or degrees are determined by their difference from a degree zero and have a definite, asymmetrical and heterogeneous order. Thus, intensive degrees differ in kind, but are still implicated by one another. Accordingly, the higher, 'enveloping' intensity or *depth* implicates all the 'enveloped', lower intensities or *distances*. This heterogeneous nesting of intensities also entails that all changes in intensive quantities are changes in kind, e.g. from hot to cold. (DR, 308) Hence, the quantitative change in intensity produces a qualitative change, but according to Deleuze, intensive changes in kind are not reduced to mere qualitative changes. Namely, a qualitative change necessarily requires a change in the mode of production of the phenomenon, which brings about both the qualitative and quantitative change (change of degree). Accordingly, Deleuze regards qualitative change merely as the effect of the change in intensive quantity. Furthermore,

Deleuze argues that quality is merely the extensive effect of the equalisation of an intensive difference: 'Difference becomes qualitative only in the process by which it is cancelled in extension' (DR, 306).

Deleuze criticises the traditional definition of intensive quantities as 'indivisible'. Traditionally, the difference has been illustrated by comparing e.g. a yard-stick and a temperature. One can cut the yard-stick into pieces, and all the pieces together still amount exactly to a yard. By contrast, there is no simple operation of 'cutting' (or dividing) temperature. Hence, temperature seems to be in some sense indivisible. However, this traditional line of thought associates intensive quantity closely with quality and does not articulate the two different types of quantity involved, manifest in the expressions 'more' and 'less'. Bergson assigns this quantitativity to a mistaken association of a qualitative difference with extensive difference, while Deleuze stresses the fact that such qualities are linked to one another in a determined order and form a kind of continuum.

Deleuze asserts that it is possible to reconcile the qualitative differences or heterogeneity of intensities with quantitativity. Namely, Deleuze points out that ordinality is already a quantitative property; intensities follow an intricate order by degrees, for instance from colder to hotter or from faster to slower. They implicate one another in a strict order, but are mutually heterogeneous, a movement from one intensity to another entailing a change of nature or kind (*nature*). These differences are thus not merely qualitative, and yet this ordinality does not imply the measurability of the differences in terms of (homogenised, discrete) units of measurement. Secondly, intensive quantities are heterogeneous, in that their division entails a change in nature. Thus, they are indivisible only in a relative sense, the division being feasible but marking a change of nature in the system.[6]

[6] In addition to the Nietzschean background of the concept of distance, Deleuze draws on Meinong's and Russell's mathematico-logical definitions of distance (DR, 306). Meinong retains a clear distinction between intensive and extensive magnitude, in terms of *divisibility*: lengths or 'stretches' (*Strecke*) are extensive and divisible, while distances (*Distanz*) are intensive and indivisible as ordinal relations (Meinong, 1896, §3). However, Russell's distinctions are much more complex. Nevertheless, he does maintain a distinction between intensive and extensive magnitudes,

1.4.5 *Spatium* – the spatiality of intensive quantities

In contrast to the virtual network of ideas, the intensive field of individuation is in some sense sensuous. As we already saw, according to Deleuze, intensity creates space and time, the universal forms within which things are perceived. However, intensity is not spatial nor temporal in the sense of actual beings, which possess a certain temporal duration and extended parts. In what sense is the *field* of individuation spatial?

For Deleuze, the intensive space or *spatium* is a central instance of intensive quantity. It underlines the concrete, but pre-sensible nature of intensive quantities. Namely, Deleuze claims that space is primarily a cascade of distances, which are defined solely by an order of implication, not by a cardinal unit like extensive quantities (DR, 300). That is, space is not primarily an empty container waiting to be filled by objects, but according to Deleuze, it is a developing series of distances between degrees of potentials.

Deleuze first develops the concept of intensive space from a mathematical point of view, where space is constituted by abstract distances that enfold or envelop one another. Thus, intensive space has an abstract mathematical form as well, defined by ordinality: the distances form an ordinal series. Still, I argue that the primary contribution of the Deleuzean concepts of intensive quantity and space is related to dynamic systems, for instance physico-chemical or embryological ones. Indeed, Deleuze considers the concrete intensities and their relations primordial and their mathematical formulations only secondary expressions of these primary realities. It is important to understand that Deleuzean ideal differentials or intensive quantities

but he defines the former solely in terms of non-measurability, while he defines ordinal distances as extensive magnitudes, together with divisible quantities or stretches. Russell's choice would seem to be based on the axiom that 'equal stretches correspond to equal distances' (Russell, 1938, §169). However, he himself admits that this is essentially a formal convention. Furthermore, this equalisation of an intensive difference is precisely the operation by which it becomes an extensive quantity. Also, if we accept ordinality and heterogeneity as the essential properties of intensive quantities, on this basis the indivisible ordinal distances can be defined as intensive and distinguished from the homogeneous, divisible quantities or stretches. (Russell, 1938, §244–48, §151–53, §167–71)

are not mathematical ideas applied to the nature of reality but tentative conceptual expressions of real, metaphysical entities. This is a sign of Deleuze's (transcendental) empiricism: an adequate concept is not applied to an empirical reality which is supposed external to it, but it makes something real visible or makes it conceivable as empirical.

According to Deleuze, the *spatium* is defined by distance and order, it is essentially ordinal. That is, it consists solely of a cascade of distances, implicating and enveloping one another in a definite order. Deleuze labels the enveloping intensity *difference* or *depth* and the enveloped intensities *distances* (DR, 305–06). A distance is:

> 'in no way an extensive quantity, but an indivisible asymmetrical relation, of ordinal and intensive character, which is established between series of heterogeneous terms and expresses each time the nature of that which can be divided only by changing its nature' (DR, 306).

Thus, intensive space does not have a homogeneous, general structure, but is composed of a heterogeneous series of distances. It is a complex structure, determined only locally. Furthermore, as a consequence of the ordinality of the intensive space, the relations of its distances are asymmetrical: these relations differ depending on the direction of the movement or change. The change from 15 ℃ to 30 ℃ is different in kind from the inverse change of temperature, while the differences between extensive quantities – e.g. lengths – are symmetrical.

According to Deleuze, the structure of ordered envelopment or implication of intensive quantity explains the traditional perplexity concerning their apparently indivisible nature, which I introduced above. Can a temperature be divided? How could a quantity be indivisible? I argue that this indivisibility is clearly not a problem of calculation, but the operations of division and subtraction are not as easily translated into concrete operations as with extensive quantities, as in cutting a pie into equal pieces for instance. How does one divide the temperature of a water tank?

Whatever the solution, one must affect the source of heat. Thus, one can easily see that the new, divided temperature can indeed be produced, but it requires elaborate preparations affecting the system, mere calculation and measurement being insufficient.

Furthermore, it is not evident in any immediate sense that the temperature of the colder water is 'half' the earlier temperature. Indeed, such knowledge of proportions requires the accumulated knowledge incorporated in the thermometer. Similar reflections led Bergson to conclude that intensive quantities were nonexistent: according to him, the purported intensive quantities constitute qualitative differences that are simply associated with extensive magnitudes (e.g. the column of mercury in the thermometer) (cf. Bergson, 2007 [1889], 34–37, 47).

We can now return to Deleuze's idea that the space of nested intensive differences (the *spatium*) is essentially the space of *individuation*. I argue that the concept of intensive space articulates the dual, or in-between nature of individuation. First, individuation precedes the qualities and extended parts of an actual being. Second, the process of individuation is also distinguished from the merely virtual determinations of differential relations and singular points, which it however develops. Individuation works within the realm of bodies and senses, but it predates all actualised individuals. Deleuze articulates the complexity of individuation in spatial terms: intensive potential is not a linear tendency but a cascade of enfolded potentials (distances).

Following Martial Guéroult, Deleuze adopts the Leibnizian term *spatium* (Latin for 'space') for the enveloping intensive field of individuation. In Leibniz's philosophy *spatium* signifies an ideal space, or space as an 'innate idea expressing the intellectual order of possible (coexisting) things' (Guéroult, 1946, 429; cf. DR, 306). One could call the *spatium* a space of interiority, or simply an *inextensive* space. Paradoxically, Deleuze and Leibniz thus distinguish space – intuitively the extensive notion par excellence – from extension. Deleuze further claims that extension and extensive space have an intensive origin (DR, 296). According to Leibniz, space is quantitative

but not in itself extended, as space only consists of an order of relations. This also leads Russell to label the Leibnizian space as 'intensive quantity' (Russell, 1900, 113–14).[7]

According to Deleuze, the notion of inextensive or intensive space is necessary in order to distinguish space itself from extension and extended things (DR, 306). Moreover, he claims that extensive space is produced by intensive space (DR, 296, 298). In what sense is intensive space spatial then? As we saw above, the basic characteristic of intensive space is the ordered series of distances nested in it. By contrast, extensive space is metric and homogeneous, and its quantities are comparable via a unit of measurement, which entails cardinality and discreteness. Extensity and intensity thus refer to two different determinations of space: extensive space is more or less a homogeneous, scalar, Euclidian space, whereas intensive space is more like a topological space defined by neighbourhoods, or a vector field consisting of a multiplicity of directions and rates of change (LS, 126–27, 133, 229; DR, 230, 298, 299; DeLanda, 2002, 45, 51–52).

However, intensive space and extensive space are not separate, mutually exclusive areas but rather different points of view or modes of spatiality. They do imply fundamentally distinct spatial operations, but all concrete phenomena still manifest both spatial modalities. For instance, a ray of light has intensive properties such as its frequency, intensity, polarisation, speed, but also extensive properties, like its wavelength and energy.

The Deleuzean distinction between two modes of spatiality indicates that the sensible realm is not merely a neutral environment but possesses its own structure and logic. In fact, I argue that this is already the crux of the Kantian critique targeted at Leibniz's philosophy: for Kant, empirical knowledge is not a mere matter of ideal or conceptual relations, but knowledge can only have a sensible content.

[7] Guéroult also refers to Russell's interpretation, but there would seem to be a typographical error in Guéroult's text, where he speaks of 'intensive qualities' (*qualités*) instead of quantities (*quantités*) (cf. Guéroult, 1946, 434). This correction makes the passage coherent.

Consequently, knowledge is necessarily a hybrid of conceptual form and sensible content. This is usually referred to as the 'Kantian dualism', which consists in procuring sensibility an independent status from concepts. However, Kant still leaves sensibility under the yoke of concepts as a homogeneous realm to which the pure concepts of the understanding are a priori applicable. I argue that it is Deleuze's aim to flesh out the Kantian notion of the autonomy of the sensible, surprisingly by invoking the Leibnizian concept of ideal space. For Deleuze, the important question is no longer the Kantian 'How can concepts be applied to the sensible?' but instead: 'What are the processes and structures that produce sensible beings which can be represented by concepts?'

Deleuze follows Leibniz by assimilating extension (or extensity) with extended things and in developing a notion of space as an inextensive order of distances. That is, these inextensive distances are only defined by their *order*, not referring to an empty, absolute space (PLB, 28). However, where Leibniz seems to conceive the *spatium* mainly as an intellectual condition for extents and qualities, Deleuze deploys it as their concrete, intensive mode of production (cf. Guéroult, 1946; Russell, 1900). Thus, I argue that Deleuze adopts the Leibnizian ideas of spatial order and distance and deploys these notions in a dynamic context, not present in Leibniz's discussion of space.

The Deleuzean intensive space is constituted by implication of differences and distances: distances are the primary, quantitative inequalities within the sensible that are implicated by the differences in the intensive space. This system of implication also accounts for the difference between intensive and extensive quantities. The extensive quantity and its divisibility are defined by a unit, the equivalence of the parts determined by the unit and the consubstantiality of the parts with the divided whole. By contrast, according to Deleuze, intensive quantities imply at least two 'series of heterogeneous terms'. (DR, 305–07, 286–87) The heterogeneous mutual implication of intensive quantities means that they are in relations of 'greater

or lesser' but differ in kind (*en nature*) from one another; modifying an intensive quantity changes its nature, but it still belongs to a particular order of differences. Deleuze defines distance as the relation between these series of heterogeneous terms. Thus, distance is for Deleuze only an ordinal concept, which does not imply extensive length but only a position within the intensive order in relation to other distances (DR, 306).

I argue that most importantly, the concept of intensive space links intensity to a *system*, within which its heterogeneous potential is enveloped and developed. In *Difference and Repetition*, Deleuze concentrates primarily on physical, biological and psychic systems of individuation. In the following section, we will discuss the background of Deleuze's systemic approach to individuation in Gilbert Simondon's philosophy. With regard to role of systems in Deleuze's philosophy, it is useful to note that in his early work, Deleuze interprets what he and Guattari will later call the *anthropomorphic strata* mainly in psychological and psychoanalytic terms, instead of the linguistic and technological double articulation of anthropomorphic strata of *A Thousand Plateaus*.

1.5 Gilbert Simondon's theory of individuation

Deleuze adopts the basic scheme for his theory of individuation from his contemporary, Gilbert Simondon, and more precisely, from the latter's work *L'Individu et sa genèse physico-biologique*[8] ('The Individual and Its Physico-Biological Genesis') from 1964. Simondon's work offers a philosophical theory of individuation based on a rich scientific outlook on generative processes. According to Simondon, instead of seeking to define the nature of individuals, we should concentrate on the process of individuation and define the individual in terms of this process. Consequently, he argues that the individual is primarily not a being but rather an action (Simondon, 2005, 197). Indeed, the simple radicality of Simondon's project consists in formulat-

[8] Simondon, 2005.

ing a concept of individuation without presupposing the existence of an individual (cf. Sarti et al., 2014, vii).

In *Difference and Repetition*, Deleuze formulates a metaphysical theory of individuation which, however, essentially seeks to account for concrete processes of individuation rather than their conceptual or formal conditions, as in the Aristotelian and Scholastic accounts of individuation and individuality. In this naturalistic respect, Deleuze draws heavily on Simondon's seminal work on the phenomena of individuation. Thus, in order to understand Deleuze's use of Simondon's concepts, it is necessary to study their background in Simondon's work. Furthermore, Simondon's critique of hylomorphism as well as concepts like transversality, metastability and disparity are also important ingredients of Deleuze's later thought. Further below, in Section 6.9, I will also discuss Simondon's philosophy of technology.

1.5.1 Simondon's critique of hylomorphism

Simondon criticises the classical Aristotelian 'hylomorphic schema', the thought scheme that divides the world into matter (*ὕλη*) and form (*μορφή*). Simondon argues powerfully that this schema is an abstraction based on an artisanal notion of matter as something mouldable. In ancient Greek thought (Aristotle in particular) the paradigm of forms was furnished by the shape or mould of a thing, which allows a craftsman or an artist to craft the desired object, e.g. a bed, brick or sculpture, and matter was simply the material out of which the object is crafted. According to Simondon, this artisanal model as such is not problematic, but rather our conception of it. Namely, this is the conception of an outsider, who is familiar with the finished products of technology and the materials used but not with the material practicalities of producing them (Simondon, 2005, 46). Thus, separated from the concrete artisanal techniques, the mould gives rise to the idea of an abstract form and essence of the thing, while the particular substance used as a material inspires the notion of an indifferent, homogeneous and malleable matter simply serving as

an empirical support for the pure form. As a result of this abstraction, the form of an object is conceived of as independent of the techniques and of the behaviour of the material, which must be appreciated in order to produce the object, as the form of the object is assimilated to its mould. (Simondon, 2005, 39–40)

More precisely, Simondon wants to update the notions of matter and form in energetic terms. According to him, the concepts of matter and form have a real basis, but they provide only a limited account of concrete existence and natural phenomena. Simondon suggests that the energetic potential mediated by a material is the most central genetic feature in physical individuation and also in technological production. Furthermore, the form imposed by a mould or a design serves only as the limit for the actualisation of a potential energy, while matter is what mediates or 'transports' (*véhiculer*) this actualisation (Simondon, 2005, 42–43). What individuates for instance a brick is not the mould, which is used in manufacturing countless bricks, but the intrinsic nature and structure of the material and the operations needed in the production process. Thus, in the case of technological production, in addition to the actualisation of a physical potential of the material, the manipulative operations of a craftsperson or of a machine are also essential parts of the individuating process (Simondon, 2005, 48).

1.5.2 Potential energy and metastability

According to Simondon, the actualisation of a potential energy is the essential process driving all individuation. He acknowledges a certain relativity in the notion of potential energy: although undoubtedly referring to something real, its nature and quantity depend on how the system is demarcated. For instance, a homogeneously heated body considered as a system possesses no potential thermic energy as such, but if one brings it into the vicinity of a body at a different temperature, a potential thermic energy appears. Nevertheless, potential energy corresponds to a real

capacity for transformation in a system, which requires a heterogeneity between at least two elements of the system. (Simondon, 2005, 76–77)

Simondon stresses the physical reality of potential energy:

> Potential energy is not simply a manner of seeing, an abstract consideration of the mind. Indeed, it corresponds to a capacity for real transformations in a system, and the very nature of the system is more than an arbitrary grouping of beings operated by thought, as for an object the fact of being a part of a system defines the possibility of mutual actions in relation to other objects that constitute the system. Consequently, the participation in a system is defined by a virtual reciprocity of actions between the terms of the system. (Simondon, 2005, 77–78)

The distinction between a physical potential and a logical possibility is also crucial for Deleuze. Simondon relates potential energy to a real capacity for transformations within a system. Moreover, he defines a system not merely as a collection of objects, but in terms of the mutual actions among these objects. Simondon's conception of potential energy is not so much opposed to logical possibility but it simply follows a more specific set of criteria, related to a particular context. Namely, a potential cannot simply be defined as a possible state of affairs, as it must be related to other beings and its interactions with them. In brief, a potential only exists in a system.[9]

When discussing the theme of individuation, Simondon claims that the potential energy of a system consists in a *difference between two levels or orders of magnitude of the system, which are brought into communication in an individuation process.* This state of the system which is both stable and endowed with potentiality is called

[9] Even in this view, there is no *a priori* hindrance for an analysis of a potential energy in terms of possible states of affairs or counterfactuals. However, from the point of view of a particular physical system, these linguistic models inevitably contain a superfluous element stemming precisely from the fact that the descriptive linguistic model is construed as something external to the system and thus it necessitates its own interpretation and ontology, *de jure* independent of its object. In brief, Deleuze and Simondon are conceptual realists: from their perspective, one need not make a (Kantian) choice between empirical judgments and conceptual or logical analysis. Instead, they are advocating a speculative or transcendental empiricism of the genetic conditions of phenomena.

'metastable'. In the thermodynamic paradigm, metastability first of all characterises the potential energy of a system. Second, it implies a difference between two orders of magnitude or scales in a system. Third, it implies an increase in entropy, involving the resolution of potentialities and the energetic degradation of the system (see Garelli's preface in Simondon, 2005, 14). The state is called metastable because of the system's relative stability, which, however, can easily unfold if provoked. Simondon terms this unfolding of a potential between two levels in general *transduction* (Simondon, 2005, 32–33). The processes that Simondon labels as individuations happen at an intermediate level between a superior and an inferior order of magnitude, between which the resolution of the potential takes place. The 'superior' and 'inferior' levels refer to the molar and molecular levels of the system, respectively. The metastability of the system entails that the two orders of magnitude are heterogeneous; in a sense, the molecular level does not recognise the potential of the molar level. Simondon calls this lack of communication between the different levels *disparation*. Thus, an input of information or disturbance is required to provoke the levels to communicate, the potential to resolve and the process of individuation to take place. (Simondon, 2005, 31)

1.5.3 Disparation

Simondon borrows the term 'disparation' from the theory of perception, where it describes the relation between the two separate two-dimensional images on the retinas of each eye: the images are not directly superposable – i.e. they are disparate – and meshing them together requires the instauration of a new, three-dimensional image, in which the information from both images is incorporated (Simondon, 2005, 204, n. 15). According to Simondon, this is not simply a question of uniting the initial images or of abstracting their mutual elements from them, nor yet of reducing the original images. On the contrary, perception involves the creation of a superior system integrating and amplifying the original images – three-dimensional vision

reconciles the initially incompatible two-dimensional images in a three-dimensional perceptual system. (Simondon, 2005, 207)

Deleuze also affirms Simondon's idea that instead of apparent differences or oppositions and their unified synthesis, real systems function by a tension between a dimension of disparation or potential energy and another dimension of communication of these disparate elements. The important thing about this tension between two dimensions or orders is that the dimension of communication is of a different order than the disparate elements it integrates. Thus the communication between different levels is not properly a synthesis, but rather an integration, as it does not so much combine or unite two elements as establish a novel dimension of a higher order in which the initial elements can be brought to communicate. (DR, 303–04)

Deleuze adopts the notion of disparation from Simondon, but is critical of the latter's conception according to which the disparate series should still resemble one another in some way, or that the difference between them should be relatively small (DR, 158; cf. Simondon, 2005, 221–23). In another context, Simondon criticises Lewin's psychological theory of human action for its opposition between a subject and an object. He suggests instead that the tension between such forces must be based on a disparation manifest in the subject itself. However, Simondon argues that a change in the subject's activities in relation to external objects ('an integration of the elements into a new system') presupposes a similarity between the disparate structures in the subject and in the object (Simondon, 2005, 209). Deleuze affirms this primacy of disparation over oppositions, but denies the requirement of resemblance or similarity between the disparate series in communication. Instead, he argues that the magnitude of difference between the disparate series or their resemblance is not an internal feature or prerequisite of the system, but only an effect of the unfolding of the system. (DR, 157–58)

1.5.4 Physical and biological individuation

In his analysis of forms of individuation, Simondon focuses mainly on two forms of individuation: physico-chemical and biological or 'vital':

> [...] There is physical individuation when the system is capable of receiving information only a single time and by individuating itself, the system develops and amplifies this initial singularity without limiting itself. If the system is capable of receiving several successive inputs of information, of keeping score of several singularities instead of iterating the initial unique singularity by a cumulative effect and by transductive amplification, then the individuation is of a vital, self-limiting and organised type. (Simondon, 2005, 152)

Thus, physical individuation consists in the amplification of a single singularity that is introduced in the system, while the organic individuation of living beings develops several inputs of singularities. The paradigmatic model of physical individuation for Simondon is crystallisation. Accordingly, the individuation of a crystal is based on a single singularity or input of information – the crystalline germ – and consists essentially in the amplification of the topology or structure of this initial singularity.

On the other hand, biological individuation is based on several singularities, the structures of which are all amplified, but these multiple processes interact and thus develop into an organism with a more complex structure with several focal points of development and successive inputs of information. Thus, the processes of physical and biological individuation are interrelated, and according to Simondon, biological individuation does not happen after physical individuation, but emerges as its variation. The living individual would thus be at its most primitive stages an amplifying crystal in its nascent state. Simondon evokes here the phenomenon of *neoteny*, where a sexually mature individual maintains premature, larval characteristics, as for instance the axolotl salamander. It is very usual for the axolotl not to undergo

the metamorphosis into adulthood, but it is nevertheless usually able to procreate. Simondon suggests that the generation of life forms can be seen as a crystallisation process which maintains longer its ability and also its need to receive information. This however means that more complex beings are also less complete and stable than the simpler ones. According to him, this can be seen in the fact that the more complex individuals are less self-sufficient than simpler ones, as they depend on individuals of simpler constitution (plants in the case of animals) as information inputs in order to survive. (Simondon, 2005, 152–53)

Physical individuation – crystallisation

For Simondon, crystallisation is the paradigmatic example of physicochemical individuation. However, it is clearly not the most basic or simple form of individuation, as Simondon suggests that his theory should apply to all distinguishable molecular and submolecular bodies as well. Indeed, he stresses the systemic and topological aspects of individuation: what matters is not the apparent degree of complexity of the substances and particles but the nature of their genesis and behaviour – their process of individuation. In this respect, all physical and chemical systems are similar to one another, while they differ markedly from biological systems. (cf. Simondon, 2005, 317–18) However, the advantage of crystallisation as an illustration of physical individuation is that its result is a macroscopic, molar body, while it is produced by a molecular process. Thus, in the case of crystallisation, there is a patent potential difference between two different orders of magnitude. (Simondon, 2005, 26–27)

Simondon lists three conditions for the formation of crystals: (1) energetic, (2) material and (3) informational. First of all, the genesis of a crystalline structure requires a system in a metastable state, endowed with potential energy – this normally entails a supersaturated or supercool liquid. Second, the molecular structure of the substance imposes constraints on the course of crystallisation and the forms it can take. Third, the informational condition is fulfilled by an external element, a germ or

'singularity' which provokes the metastable state into the process of crystallisation. (Simondon, 2005, 79) Simondon thus concentrates on heterogeneous crystallisation provoked by an external element (a foreign particle or e.g. the wall of a container), more common than the homogeneous one, which is not based on the intrusion of an external element, but only on energetic conditions.

On the basis of the initial information provided by the crystal germ, the potential energies of the supersaturated liquid begin to unfold. Simondon describes this process as an amplification of the initial crystalline structure, which thus develops as a kind of fractal pattern. There are various possible, intermediate metastable stages in this process of crystallisation, but ultimately, the potential energy inherent in the initial state of the substance determines the limit of the process. However, the initial potential energy does not determine the endpoint of the process, which depends on the nature of the two other conditions. (Simondon, 2005, 79–80)

Biological individuation

In contrast to the crystalline physical individuation, Simondon does not present a single paradigmatic model for biological individuation. This is understandable, as the active interior space characteristic of living organisms enables a diversity of complex structures, of specialisation of organs and consequently a diversity of organic functions. Also, Simondon draws attention to the fact that biological individuation involves relations between individuals and colonies, societies and species. Indeed, we must remember that individuation has less to do with the structure of a particular individual than with the distinct topology of a dynamic process taking place in a field of forces, involving several disparate series of elements and events.

Simondon discusses biological individuation at four main levels: ontogenesis, homeostasis, psychism and population dynamics. Ontogenesis refers to the development of an individual from an initial germ into a mature individual. This happens through amplification based on disparate series. Second, homeostasis refers to the

perpetuation of a metastable state of the mature individual. At this level, a kind of equilibrium is reached, but the metastability of the system entails precisely that the tensions between disparate series are maintained, not resolved. (Simondon, 2005, 204) Third, just as life emerges as a slowing-down or neoteny of physical individuation, psychic activity constitutes an analogical variation on the dynamics of life. According to Simondon, psychism emerges when life cannot enclose the duality of perception and action in a unity but creates a (psychic) sphere of interiority, where this duality is interiorised and maintained. Thus, in practice psychism means slower reactions or responses, as actions do not follow immediately from perceptions, as in the primary, affective mode of life. (Simondon, 2005, 165)

Finally, population dynamics concern the relations of an individual to a larger group of individuals and perhaps more importantly, the populational, 'transindividual' processes surpassing the individual. In fact, according to Simondon, collective life is a direct consequence of psychic activities, as psychism emerges as a response to the problems related to the preindividual surroundings – how to act in response to problematic perceptions? Thus, psychism is expressed as an openness to the environment in the attempt to solve the problems posed by it. This openness and incompleteness calls for a new, collective form of individuation, seeking solutions to the tensions between perception and action. However, Simondon distinguishes psychic collectivity from *sociality*, a social form of organisation also found among animals, as sociality is simply the expression of the collective nature of animal life – animal individuation always concerns a group or population. On the other hand, collective life in Simondon's sense is not only inter-individual coexistence, where relatively autonomous individuals develop reciprocal relations of exchange. Instead, for Simondon, human collective individuation constitutes a distinct type of individuation at the transindividual level of the collective of psychic individuals. I argue that the specificity of this collective individuation lies in the fact that it does not develop the single essence of a species but reacts progressively to changing situa-

tions (cf. ID, 124. Indeed, Simondon emphasises the historic character of collective individuation. (Simondon, 2005, 166-67)

According to Simondon, all processes of individuation involve differences of potential and its unfolding, based on successive inputs of information, expressing tensions between disparate series. The essential differences between different kinds of individuation concern their respective dynamics, expressed in topological terms. Next, we shall discuss Simondon's conception of these dynamic differences, which define different types of individuation.

1.5.5 Topology and chronology of individuation

Simondon defines individuation in terms of the two main dimensions of topology and chronology. This means that individuation involves a spatial and temporal synthesis, developing an internal space and time. However, this spatiality and temporality should be distinguished from the Euclidian, metric paradigm: 'in topology, there are no distances and in chronology there is no quantity of time' (Simondon, 2005, 226–27). Other, unindividuated physical processes and states (e.g. liquid or gaseous) are homogeneous and amorphous and thus do not form distinct structures. By contrast, an individual is first of all something that has a topological structure, distinct from an amorphous, isotropic mass. Second, this topology is realised temporally in a system. Below the level of individuation, there is no topological configuration capable of creating an internal history. The chronology of an individual develops its topology and is thus partially determined by it, but the system also reacts to itself in a nonlinear manner, and thus is not completely determined by the basic topology.

Simondon thus distinguishes the becoming of a physical system from the classical notions of determinism and substantialism. The determinism of a system would from the point of view of its becoming mean that there is no internal resonance in the system – this would be the case e.g. in classical thermodynamics, which considers energetic processes only from the macroscopic point of view of a system. As for

the notion of substance, according to Simondon, if we define it as 'totally identical to itself, perfectly coherent with itself and one', it would correspond to a purely undetermined system, an individual completely resonating with itself (Simondon, 2005, 149). By contrast, an individual for Simondon is a system in a process of becoming which itself reacts to this process. Thus, an individual is only partially determined by its topology and it is in partial resonance with itself. (Simondon, 2005, 148–49)

What does this individuating topology consist in? According to Simondon, individuation is characterised primarily by the distinction between the inside and the outside of a limit or boundary. In an organism, the membrane serves as such a boundary. Consequently, in complex, multicellular organisms there are several levels of interiority, as Simondon defines interiority and exteriority from a cellular perspective in functional and topological terms and not in conventional, phenomenological terms of human experience. For instance, while the *in*testine would clearly seem to be inside us, from the cellular point of view the cavity of the intestine and in fact of the whole of the digestive system can be viewed as the exterior of the individual, from the point of view of the assimilating cells on the surface of the intestine, selecting and absorbing food molecules. What matters is the different functions of the inside of the membrane and of its outside. (Simondon, 2005, 225–26)

Simondon calls this spatial perspective 'topological', as distinct from a Euclidian space, because topology enables the joining of functional and structural aspects by its distinctive logic of surfaces. Manuel DeLanda describes topology as 'the least differentiated geometry', meaning that it studies the most rudimentary spatial properties (DeLanda 2002, 26). Namely, in topology, objects are defined only in terms of continuity and boundaries, which for Simondon are the essential spatial aspects of individuation processes. Continuity and boundaries mark precisely the dynamically and functionally distinctive features of a system. By enabling an analysis of the variation in the role of the surface in different forms of individuation, the

topological framework allows us to both present the different forms of individuation as intrinsically related variants of the same logic and to describe the relative differences in functional terms. While from a Euclidian point of view, bodies are seen as immersed in a common three-dimensional space and defined by their shape, mutual distances etc., in a topological framework, bodies are reduced to their surfaces, their continuity or the lack of continuity. In a similar vein, Simondon argues that organisms live on their boundaries, or we might say 'on the edge', as it is on the membrane that the metastability which maintains life persists. Thus, according to him, what is essential about life can only be grasped first in functional terms (not e.g. by morphology), and secondly, this functionality must be interpreted in topological terms as resulting from a primitive structure. (Simondon, 2005, 223–27)

From this topological perspective, the individual constitutes a more or less complex surface. In the case of the crystal, everything happens on the edges, and the topology of crystallisation is reduced to an outside limit, its interior space having practically no function in this process:

> [...] The internal space of the inert crystal does not serve to sustain the prolongation of individuation, which is effectuated at the boundaries of the growing crystal: interiority and exteriority only exist from one molecular layer to another, from a molecular layer already laid down to a layer about to be laid; we could empty out a significant part of the crystal's substance without stopping its growth. (Simondon, 2005, 226)

We could say that the memory of crystallisation is relatively short, as it depends only on its immediate environment and thus lives only in the present as it were. As for the organism, on the other hand, everything also happens on the edges there, on the membrane. However, the organism also creates itself an *internal* space, which has an active role in individuation, in contrast to the passive indifference of the crystal's core. This internal space makes it possible for the cell to maintain a kind of reserve of the past within its sphere of individuation. This reserve in turn enables

the 'internal resonance' of the cell. Simondon defines the basic mode of internal resonance as 'exchange of energy and movements within given borders, communication between a microphysical matter and a macrophysical energy, provoked by a topologically defined, medium-sized singularity' (Simondon, 2005, 45). However, in vital, biological systems, a temporal dimension is added to the simultaneous resonance, involving the past products of individuation retained in the cell (Simondon, 2005, 49). The membrane thus brings the external substances in contact with the past products of the cell, but everything happens on the surface of the membrane:

> [...] What has been produced by individuation in the past is part of the content of the interior space: all the content of the interior space is topologically in contact with the content of the exterior space at the boundaries of the living; indeed, there is no distance in topology; all the mass of living matter in the interior space is actively present to the outside world on the boundary of the living: all the products of past individuation are present without distance and without delay. (Simondon, 2005, 226)

Furthermore, the membrane does not only have a structural function of amplification, but it is also polarised: it selects, which chemical bodies are allowed to pass through it inwards or outwards and prevents others from passing through (Simondon, 2005, 224).

In *The Logic of Sense*, Deleuze characterises intensity as the nature of *surfaces*, which constitute the site of sense (an operative space presupposed by language) and events (affecting bodies) (see LS, 213–14). The continuing problem for Deleuze is how to conceive of a potentiality that is completely immanent to experience but not given in it. Surfaces such as membranes and topological surfaces provide cues as to how a surface is not simply an enclosing boundary, but e.g. in the case of the membrane has an active role in the functions of the cell, enabling the functions of

assimilation and exteriorisation (as in Simondon's theory) (see LS, 125–26). Similarly, in the case of topological surfaces, the surface is in a way able to interiorise space: from this point of view, the sphere can be treated as a kind of curved surface constituting its own space, instead of being a curved object immersed in rectangular, three-dimensional space. Deleuze continues to draw on Gilbert Simondon's analysis of physical and biological individuation, but in the main the logic of sense is here developed in relation to language, formal logic, literature and psychoanalysis.

1.5.6 The limits of individuation

We have seen so far that Simondon defines the essence of an individual in terms of processes of individuation. What are the limits or borders of individuals? Where does an individual begin and end? Simondon regards individuation as a finite spatiotemporal process with an intrinsic logic. He defines this intrinsic logic as the topology and chronology of the individual. Thus, the becoming individual has a particular internal structure, which unfolds spatially and develops in a temporal order. Simondon's paradigmatic examples are crystallisation and the ontogenesis of organisms. The unfolding of an internal structure differentiates the individual from homogeneous matter and distinguishes it from its environment, although in the case of living beings the relation with the environment also has an essential role.

However, the notion of individuation would seem to be similar to the notion of system in that its scope is ultimately somewhat arbitrary, but the process it describes is real and in this sense absolute. Thus, the main point of the notion of individuation is not to give instructions for distinguishing all individuals from all non-individuals, but to identify relevant processes of individuation and to analyse their concrete logic. Arguably, any process in general involves a process of individuation, and individuation processes – e.g. biological ontogenesis – are constituted by individuation processes of an inferior order – e.g. the individuation of individual cells. In this respect, there is some relativity inherent in the concept of individ-

uation. It would seem that one can equally well consider the development of an organism and the development of a single cell as cases of individuation. However, from the point of view of an organism, individual cells are not crucially important, as they mostly carry out vital functions in large, relatively homogeneous groups and are thus individually dispensable and replaceable. However, a cancerous tumour would seem to be already closer to a separate process of individuation, as although it depends on its host organism, it precisely has no organismic function and can be downright fatal to the organism.

According to Deleuze, the essential objective of a theory of individuation is not to distinguish or to recognise the individuals as such, as this recognition always presupposes a principle of individuation of a particular type of individual (cf. SPE, 179). However, individuation must not be placed temporally before the individual either, as the individual constitutes the immediate milieu or space of individuation. Thus, individuation is not a general structure of all beings but it 'must be localisable and determinable in relation to being, in a movement which makes us pass from the pre-individual to the individual'. (ID, 120–21) Furthermore, Simondon and Deleuze both emphasise the fundamental, populational mode of being of the biological individual (Simondon, 2005, 167; DR, 280). I argue that individuation is always an ongoing process, which may encounter thresholds and periods of relative stagnation, but is nevertheless open to variation and change.

1.5.7 Beyond Simondon's theory

Deleuze develops a general theory of individuation, drawing heavily on Simondon's ideas. However, from Deleuze's point of view, Simondon is too attached to the paradigm of the natural sciences and its representational conditions. The relevance of individuation with regard to natural processes is nevertheless something Deleuze would seem to adopt quite directly from Simondon. For instance, Deleuze endorses Simondon's analyses of the topology of crystallisation as happening at its outer lim-

its and the functioning of the biological membrane as bringing the outside in contact with the data stored in the cell (LS, 125–26). However, it is telling that he does not adopt Simondon's theory of psychic and social individuation. It would seem that for Deleuze, these domains are more contingent than physical and biological processes and consequently, also more political. This is a perspective that a naturalist approach like Simondon's may not acknowledge. In contrast to Simondon, in the psychic and social contexts, Deleuze with Guattari focuses on the dynamisms of desire and creativity, rather than the unifying aspects of a society. Paradoxically, in a sense he does retain a naturalist approach to the psyche and to society, but one that addresses exceptions and pathologies as well, not only the ideal or average of a society as a whole. As we will later see, he develops these themes especially in his work co-authored with Guattari.

In his early thought, Deleuze affirms Simondon's tendency to emphasise the fundamental role of disparity and difference as the generator or fuel of all processes. However, this is also where Deleuze criticises Simondon, as the latter according to him still postulates a requirement of resemblance between the disparate series constituting a system (DR, 158). Thus, Simondon still to some extent presupposes a certain established scientific framework with its requirements, instead of fathoming more profound dynamisms, perhaps presupposed by existing scientific theories. Even if Simondon articulates the profound link between the differences of potential and the dynamism of a system, this link still remains somewhat contingent and is subjected to a transcendental presupposition of unity, in the guise of resemblance. Thus, from Deleuze's perspective, Simondon still envisages differences of potential too much in terms of a pre-existing unity, not as possessing a pure positivity in themselves, as heterogeneous differences.

Another important aspect that Deleuze adopts from Simondon is the idea of individuation as the *expansion* of a system. In *Difference and Repetition*, this is the forced movement transforming the system. In *A Thousand Plateaus*, all the

different strata possess their own mode of expansion: the physical strata expand voluminously, genetic code is transferred linearly and language operates superlinearly. More importantly however, as we will see in Chapter 2, with the concept of *assemblage*, Deleuze and Guattari seek to articulate the logic of the heterogeneous formation and transformation of contingent, collective systems.

1.5.8 Intensive mathematics and the ideal time of individuation

In addition to the physicochemical and biological cases of individuation, Deleuze also envisages a mathematical form of individuation, which Simondon does not consider (ID, 121). However, this would seem a natural step, as Simondon defines individuation precisely in topological terms. However, Simondon restricts individuation strictly to the realm of natural, empirical existence. Deleuze's intensive, transcendental logic of the pure structures of individuation is strongly inspired by mathematical notions. However, this logic is not simply subjected to mathematical structures and conditions, but mathematics is the domain investigating the pure topological structures proper to individuation. I argue that we can distinguish between mathematical and empirical structures of individuation in a straightforward manner, with reference to the Simondonian notions of topology and chronology: empirical individuation has both a definite topology and chronology, while mathematical individuating structures only involve the topological side of individuation.

Accordingly, the scope of the Deleuzean concept of intensity is not limited to the physical world, as it is foremost a quantitative concept, i.e. not simply empirical. Thus, for instance mathematical objects have intensive components related to degrees of variation and certain spaces, such as topological spaces and Riemannian surfaces, can be characterised as intensive in Deleuze's sense. The intensity of a space would lie in its intrinsic structure not representable in general terms as e.g. a Euclidian space. Still, also for Deleuze, individuation as the essential logic

of intensive quantities primarily characterises empirical processes of individuation and accordingly starts with physical bodies. Nevertheless, even if we cannot strictly speaking talk of a mathematical process of individuation, there would seem to be an individuation of mathematical bodies, which share certain intensive characteristics with the individuation of empirical bodies.

I introduced Deleuze's analysis of the relation between intensity and differentials in Subsection 1.4.2. In the context of solving differential equations, a power series development of the corresponding function may be a necessary means of integrating the function and solving the equation. That is, in certain cases we may have to develop a function in a serial form in order to know its nature in the neighbourhood of a particular point. According to Deleuze, the series development involves an operation in ideal, logical or structural time (cf. DR, 265, 272, 280, 356). This ideal time has no specific empirical measure, but it refers to an order inherent to a series of formal operations – it is ordinal. As we saw in Subsection 1.4.5, according to Deleuze, ordinality is a fundamental property of intensive quantities and manifests the heterogeneous and asymmetrical character of intensity.

According to Deleuze, ideal, structural time determines the empirical time of spatiotemporal dynamisms of a system (DR, 280). Furthermore, he says that this structural time determines the rhythms of actualisation and I would suggest that it consists essentially in a certain order of reasons, which corresponds to the dynamic order without directly resembling it (cf. DR, 272). Thus, the rhythms of actualisation are determined by a structural order, but their appearing requires the establishment of an intensive, dynamic spacetime.

1.5.9 Recapitulating remarks on Deleuze, Simondon and individuation

Intensity is for Deleuze the modality of the differences driving the becoming of a system or of individuation. Thus, he defines individuation as an essentially intensive

process. Deleuze's account of individuation is strongly based on Simondon's theory, which provides ample empirical and theoretical material from the natural sciences. Simondon sees individuation as starting from a metastable state of a system existing between two heterogeneous or disparate orders of magnitude of the system. Metastability is the nature of a potential which is easily triggered to resolve, unleashing a process of actualisation. This actualisation brings the two levels of the system into communication, which Simondon calls 'transduction'. According to Simondon, surfaces play a central role in the topology of individuation: the crystal only grows at its borders and the organism lives on its membranes, which maintain its vital metastability.

I argue that Deleuze generalises Simondon's findings concerning the intrinsic logic of a generative process. However, Deleuze also seeks to develop Simondon's ideas concerning systemic transformation further. First of all, in *Difference and Repetition*, Deleuze analyses the logic of individuation in terms of intensity as the essential character of heterogeneous variation and systemic transformations. Also, due to the particular intensive spatiality or topology relative to individuation, Deleuze accentuates the mathematical and quantitative perspectives on individuation. As we will see below, later on in *A Thousand Plateaus*, the concept of *haecceity* articulates the mode of individuation of a system. Furthermore, the haecceity's two dimensions of *longitude* and *latitude* conceptualise the kinetic and affective aspects of individuation in a new manner. In terms of affectivity, for Deleuze and Guattari, the individual as a process or dynamic of individuation can be defined in terms of what it is capable of. Thus, while Simondon connects individuation with a particular topology and chronology and focuses on generative processes, from the Deleuzean perspective, Simondon's theory can be seen as a part of a more general intensive and affective theory of individuation.

1.6 Individuating haecceities

Despite the vast scope of Simondon's theory of individuation, Deleuze seeks to further generalise individuation as a constituent in all generative processes. Accordingly, he defines individuation as a characteristically intensive process, and I argue that this perspective of individuation is always present in Deleuze's discussions of intensity and intensive quantity. Furthermore, in *A Thousand Plateaus* (1980) (*Mille Plateaux*), Deleuze together with Félix Guattari links the individual intensities to the medieval notion of 'haecceity' (*haecceitas*) or 'thisness' (MP, 310). As with Duns Scotus, the haecceity does not so much refer to a transitory impression as to a distinct, intrinsic mode of being. However, Deleuze develops this nominalistic notion by considering it as an intensive degree of *potentiality*. A degree of potentiality possesses an individuality, but it is also a part of a continuum in a logic of production. For instance, all the degrees of temperature express the molecular movement happening in a substance and thus the degrees imply one another as variants of the same logic of production.

For Deleuze, this dynamic capability of individuating production corresponds to kinetic relations between material elements. In *A Thousand Plateaus*, these two dimensions are termed the *latitude* and *longitude* of a haecceity, again referring to medieval terminology. Longitude consists of the *kinetic relations* of movement and rest, or of speed and slowness, between material elements, while latitude refers to the *affects* which an individual is capable of, corresponding to a certain capacity or degree of power (SPE, 173–74, 189; MP, 318). I argue that the longitudinal kinetic relations between infinitely small particles correspond to the virtual, differential relations of *Difference and Repetition*, and the latitudinal dynamic degrees of power refer to intensity, of which latitude constitutes the range (cf. DR, 315, 325; MP, 310, 314). However, in this context, individuality would seem to correspond primarily to the intensive latitude, as it is what determines the process of individuation. Still,

individuation always takes place in a material with characteristic kinetic relations between its constituents (longitude). Thus, as Simondon puts it, individuation is not a form imposed on matter, but it emerges as the realisation of a potential inherent to the material. (Simondon, 2005, 40–44)

What is important here is the generalised dynamic notion of individuation: individuation is a process, not a matter of conceptual classification. Also, it is not defined by an identity, but precisely by positive differences of potential that affect the process. Generative processes are essential cases of intensity, potentials and intensive individuation. However, it would seem that at a more general level, Deleuze describes this intensive potentiality in terms of *affectivity*: what is an individual capable of?

Initially, we can distinguish two forms of intensive potentiality: the one involved in the internal development of an individual and the other involved in its power of affecting and being affected. However, I argue that the former generative point of view can be seen as part of the affectivity of an individual, as we saw in Section 1.2. It would seem that the individuation involved in crystallisation and ontogenesis can easily be seen as a capacity for affecting and being affected: for instance, the cell division developing from within a zygote reorganises the contents of the zygote, but this depends on information passing in the dividing zygote. That is, the process of individuation is never a blind, mechanical process, but one involving inputs of information and reactions to them. Deleuze calls these basic interactions 'passive syntheses' that cumulate as visible physical processes and active syntheses (see chapter 3). The concept of haecceity emphasises further the fact that individuation always involves simultaneously the two corresponding, parallel dimensions of the kinetic differential relations between simple material elements, and the power of affecting and being affected.

1.7 Intensive, affective latitude

Scholastic philosophers talked of *longitude* and *latitude* as the two basic dimensions of beings, nowadays more familiar in their geographical context. The scholastic longitude and latitude can be translated more or less as extensity and intensity in Deleuze's terminology, respectively. However, as we have seen, longitude involves more precisely the differential, kinetic relations between extensive elements, and latitude constitutes the intensive variation of *affectivity*.

The concept of latitude was first introduced as the dimension of qualitative variation, based on Aristotle's philosophy (Jung, 2010, 551–52; cf. Duffy, 2006, 102; SPE, 173, n. 2). In *The Categories*, Aristotle formulates the idea of the degree of a quality:

> Qualities [*τὰ ποιά*] admit of degrees. For one thing is more white than another; another, again, is less white. And one thing is more just than another. And a thing may get more of a quality; for things that are white may get whiter. (Aristotle, 1973, 8.10b)

However, Elżbieta Jung argues that the following passage from *Physics* provided the spark for the medieval discussion of the *latitude of forms* and of *the intension and remission of forms*:

> Movement with respect to quality [*τὸ ποιὸν*] we may call alteration [*ἀλλοίωσίς*] [...]. Change within the same species [*εἶδει*] but with respect to the more and the less is alteration, since it is movement from a contrary to a contrary, whether unconditionally or to some degree [*μή*]. For when it proceeds to the less, it will be said to be changing to the contrary, and when to the more, from the contrary to the attribute itself. For it makes no difference whether the changing is to some degree or unconditional, except that in the former case the contraries will have to be present only

more or less. And the more and the less is the presence or absence of a greater or lesser degree of the contrary [of the attribute].

(Aristotle, 2018, 5.2; see Jung, 2010, 552)

In Oresme's work from the fourteenth century, the expression 'latitude of a form' denotes precisely the range of variation a quality or property ('form') can exhibit. As Boyer explains, in the context of the Oresmian precursor of the coordinate system, longitude referred more or less to the abscissa and latitude to the ordinate of the coordinate system. In slightly more modern terms, the abscissa would be the independent variable (usually labelled as x, acquiring values along the horizontal coordinate axis) and the ordinate refers to the dependent variable (usually marked as y, on the vertical axis). Oresme's work on representing the latitude of forms is seen as the significant developer of the graphical illustration of functions and of the coordinate system (made influential later by Descartes), indispensable for the development of mathematical physics notably from the seventeenth century onwards. Oresme writes: 'every intensity which can be acquired successively ought to be imagined by a straight line perpendicularly erected on some point of the space or subject of the intensible thing, e.g., a quality' (Oresme, 1968, Li245). Thus, latitude can for instance refer to velocity, while longitude can refer to the different points in time, allowing for a graphical, geometrical illustration of the variation of velocity as a function of time. (Boyer, 1959, 73–74, 81)

Figure 1.1 – Oresme's diagram of latitude and longitude, representing the change of velocity (the vertical bars) against time, from *The Latitude of Forms* (Oresme, 1968).

In *A Thousand Plateaus*, Deleuze and Guattari reinterpret latitude as the degree of *power* (*puissance*) of an individual, while longitude constitutes its network of kinetic relations. This is a characteristically Spinozan interpretation of the scholastic distinction, the analogy being that the power or capacity of a being (latitude, ordinate) corresponds strictly to a particular extensive relation, or state of affairs (longitude, abscissa), but these corresponding dimensions are not interchangeable. Latitude designates a dynamic dimension of affects as the capacity of an individual, while longitude refers to a kinetic dimension of relations of speed and slowness between its extensive parts. (MP, 310, 313–14, 318–21) We shall now look at this Spinozan background in more detail.

1.8 Deleuze's Spinozism: power and affects

Deleuze and Guattari use their concept of affectivity to analyse immediate, material and experiential interaction and expressivity. Affectivity consists in a being's interaction with other beings and in the ensuing transformations. As we have seen, affectivity is essentially characterised by intrinsic, intensive variation. Deleuze adopts his terminology related to affectivity early on in his work on Spinoza's philosophy, but he truly appropriates the concept first in collaboration with Guattari. In order to understand Deleuze's own theory of affectivity, we must study Spinoza's metaphysical system closely.

I argue that Spinoza's philosophy has profoundly inspired Deleuze's logic of potentiality and power (*puissance*) and in this respect, also his theory of intensity. A consideration of Spinoza's metaphysical system is all the more important, as many of Deleuze's concepts are deeply rooted there, but at the same time, Deleuze develops Spinoza's ideas so strongly into new directions that their point of origin is far from obvious. For instance, Spinoza himself never speaks of 'intensity', but Deleuze first adopts this medieval term in order to articulate Spinoza's idea of an intrinsic

difference between the degrees of power or potentiality. In fact, such ambiguity characterises Deleuze's Spinozism in its entirety: while in standard introductions Spinoza is the mystical geometrician of the first book of *Ethics*, 'On God', for Deleuze, Spinoza is foremost the philosopher of *affects*. Deleuze's Spinoza is an empiricist or existentialist, who is by default at the mercy of passions and external sensations, and can only liberate himself by experimenting and creating, and by thus increasing his powers of activity and thinking.

1.8.1 Affects and affections

First, it is important to clarify the Spinozan concept of *affect* (Lat. *affectus*) and its difference from *affection* (Lat. *affectio*). According to Deleuze, 'the *affectio* refers to a state of the affected body and implies the presence of the affecting body, whereas the *affectus* refers to the passage from one state to another, taking into account the correlative variation of the affecting bodies' (SPP, 69/49). Deleuze goes on to specify that affections and affects both always involve a bodily as well as an ideal dimension, in accordance with Spinozan parallelism between ideas and bodies, which I will discuss below. An affection includes the bodily state produced by an external body and the idea of an external body, just as an affect is both a change in a body's power of acting and the idea which affirms this change: an increase of power is felt as joy and a decrease of power as sadness.[10] Deleuze criticises the common conception that for Spinoza, affections would belong to the body as its modifications, and affects to the mind as the emotions following from these bodily modifications. By contrast, Deleuze argues that an affection is essentially a bodily trace, produced by another body, but also an image or representation of the affecting body. On the other hand, an affect constitutes a change in our power of acting and the idea expressing this increase or decrease of power.

[10] I translate the Latin *laetitia* as 'joy' and *tristitia* as 'sadness'. This choice follows the standard French translations *joie* and *tristesse*, and also Curley's English translation (see Spinoza, 1988). The most common translations for these terms are 'pleasure' and 'pain', but these concepts do not seem to convey the idea of increase or decrease of one's powers.

> It has been remarked that as a general rule the affection (*affectio*) is said directly of the body, while the affect (*affectus*) refers to the mind. But the real difference does not reside there. It is between the the body's affection and idea, which involves the nature of the external body, and the affect, which involves an increase or decrease of the power of acting, for the body and the mind alike. The *affectio* refers to a state of the affected body and implies the presence of the affecting body, while the *affectus* refers to the passage from one state to another, taking into account the correlative variation of the affecting bodies. (SPP, 69/49)

According to Deleuze, the affect *is* a duration or lived passage from one state to another, increasing or decreasing one's power of acting, and not merely the idea of this process. Accordingly, Deleuze and Guattari later also call affects 'becomings' (MP, 314). Quite simply, affects are transitional passages, real in themselves and not mere abstract comparisons between two affections or between the corresponding qualitative feelings. I argue that the Deleuzean emphasis on the concrete, bodily transition involved in the affect is justified, as Spinoza himself states:

> The affect of sadness is an act, which can therefore be no other act than that of passing to a lesser perfection [...] (Spinoza, 1972, III, def. aff. 3, expl.).[11]

> When I say a greater or lesser force of existing than before, I do not understand that the mind compares its body's present constitution with a past constitution, but that the idea which constitutes the form of the affect affirms of the body something which involves more or less reality than before (Spinoza, 1972, III, gen. def.; cf. SPP, 70).

[11] I refer to the five parts of Spinoza's *Ethics* with Roman numerals I–V, and to smaller units of text with abbreviations: p – proposition, dem. – demonstration, def. – definition, ax. – axiom, sch. – scholia, cor. – corollary, expl. – explication, etc.

The idea or feeling is the 'form of the affect', as the affect also constitutes the concrete transition from a previous state to another, 'in a lived duration, which envelops the difference between the two states' (SPP, 70/49). On the other hand, the 'reality' (or 'perfection') of the affect refers to the extent to which it is active and thus closer to the full expression of the individual's power and essence.

According to Spinoza, God's infinite power and finite human power are both essentially active, but human existence is not directly determined by its power and essence. The affect expresses an individual's power of acting, but it also manifests an essential feature of finite existence, namely that the nature of passive affects depends on other beings and on their compatibility with our nature (Spinoza, 1972, IV, p33, dem.). The dynamic variation of the affect is essentially triggered by the interaction with other individuals. Affects thus provide an alternative, concrete point of view on interacting with one's environment, in contrast to the representations of bodies external to oneself. The variation of an individual's power of acting depends essentially on a distribution of actions and passions (Spinoza, 1972, III, def. 3). Passions are affects with an external cause while actions are internally produced by the individual. Thus, Spinoza replaces Aristotelian distinction between potentiality-essence and actuality-existence with the distinction between action and passion at the level of existence, actions manifesting the individual's essence, and passions marking the individual's separation from its essence and from its ultimate power (SPE, 82, 205). I may, for instance, be hurt by somebody's words, and the ensuing affect is a passion, because I conceive of my feeling as caused by something external. However, I can also alleviate and neutralise the passion by considering the motives behind the person's words and the internal causes of my reaction, thus replacing the initial passion by active affections caused by myself.

An affect constitutes a change in an individual's power of existing and acting, i.e. an increase or decrease of this power. In the Spinozan context, Deleuze thus defines affects as 'continuous variations of perfection' (SPP, 69). By contrast, affections

are the modifications of the constitution of an individual, caused by other beings or arising from within. For Spinoza, both the variation of the power of an individual and the bodily affections leading to it involve the individual's mind and body, i.e. the mode of thought and the mode of extension. As we have seen, in spite of the mainly mental and emotional connotations of this affective terminology, Deleuze emphasises its objective and bodily nature. Thus, the affects are real, dynamic progressions happening to and in bodies as well as in thought. The transitional and bodily nature of affectivity seems to interest Deleuze, because from this point view, the interaction between beings can be analysed as a dynamic system of bodily variations, which are not reduced to mechanical laws of motion, nor to a conscious and qualitative impression of a feeling or emotion. Affects arise from interaction with other beings, but they have a rigorous, intrinsic logic. However, it seems clear that for Deleuze, affects are not simply transitions to more or less power on a single scale, but indeed pluridimensional becomings, which nonetheless indicate the abilities of an individual. The affect marks a variation in the individual, which involves a variation in something external to it, in an ensemble or *assemblage*.

1.8.2 Psychosomatic parallelism and kinds of knowledge

As we saw above, according to Spinoza, a body affecting our own body is present to us in the idea of the affection (Spinoza, 1972, II, p16). The analysis of Spinoza's thought is made more complicated by his conception of the parallel expression of each phenomenon in an ideal dimension and in an extended, bodily dimension. However, a discussion of this parallelism is necessary for two reasons. First, Deleuze adopts Spinoza's theories of affectivity and power mainly from the point of view of the body, and leaves the underlying parallelism largely unexplained. Moreover, as we will see below, Deleuze and Guattari propose their own version of parallelism as the coexistence of machinic assemblages of bodies and collective assemblages of

enunciation. Second, Spinoza's critique of conscious representations is very similar to Deleuze's, and comes close to his account of the unconscious.

Let us briefly consider the most important aspects of Spinozan ontology, which are necessary for understanding the basic nature of his parallelism. Spinoza divides reality into modes or modifications of a single substance, which appears via attributes. The attributes are forms of infinity, the central examples being infinite spatial extension and the infinite multitude of ideas (Spinoza, 1972, II, p1 and 2). Attributes are expressions of the total power of acting and existing, of which all existing things are composed as their modifications or parts. So things as extended are modifications of the attribute of extension and things as ideas are modifications of the attribute of thought. This is also the source of Spinoza's term 'mode', which refers to an existing thing from the point of view of a particular attribute, an extended body (a mode of the attribute of extension) or an idea (a mode of the attribute of thought). According to Spinoza, there is necessarily an infinity of attributes, but we humans perceive only the attributes of extension and thought. Most importantly, all the attributes share the same 'order and connection' (Spinoza, 1972, II, p7). Thus, the corresponding modes of different attributes constitute a single individual, but there is no interaction between the attributes, only correspondence.

It may seem unrealistic and far-fetched to think with Spinoza that every extended thing would in addition be accompanied by the idea of the thing. However, I argue that Spinoza's parallelism allows us to understand how knowledge can in one sense be fundamentally limited, but in another sense nevertheless perfectible. Namely, Spinoza's distinction between adequate and inadequate ideas does not primarily invoke the resemblance of an idea with an external object but instead an *intrinsic* property of the idea (cf. Spinoza, 1972, II, def. 4). This means that an adequate idea expresses the mutual relations between ideas, while inadequate ideas are singular, incoherent impressions corresponding to bodily affections (SPP, 107–08). Inadequacy in itself is an incurable state of passively experienced impressions, in the

absence of the deliberate, active efforts of understanding the world and of gaining control of one's material existence. Deleuze suggests that this inadequacy of our empirical consciousness implies the power of the unconscious both as a potential of thinking and of bodily existence. According to him, for Spinoza, our body 'surpasses the knowledge we have of it, and thought likewise surpasses the consciousness that we have of it' (SPP, 29/18, transl. modified). That is, extended, material existence cannot be reduced to our conceptions of it, but neither is the potential of thinking reduced to our actual consciousness and knowledge.

According to Spinoza, all our perceptions and sensations give us but crude notions of the phenomena that produce them. Spinoza defines sense impression and perception as the first kind of knowledge (Spinoza, 1972, II, p40, sch. 2). In sense impressions, the parallel course and order of ideas and bodies is simply reflected, but the causes of the impressions and of the phenomena remain unknown. For instance, if my stomach aches, the pain I feel (idea) undoubtedly corresponds to a certain objective state of my stomach (affection of an extended body), but the pain as such gives no direct hint as to what is actually happening in my stomach. Worse still, I am always trapped in this world of vague ideas concerning my material existence and surroundings.

Nevertheless, I may learn to discern some patterns in my sensations and in my digestive processes, and even learn how to ease and avoid the stomach aches by changing my diet. For Spinoza, proper empirical knowledge, or knowledge of the second kind, concerns *relations* between existing things, or 'common notions' (*notiones communes*) (Spinoza, 1972, II p40, sch. 2). Again, this relational knowledge of the second kind does not form a bridge between ideas and bodies, even if a greater understanding always entails a greater control of one's affects. However, this knowledge and understanding of the second kind does not consist in abstract principles. The known relations are of course expressed as general ideas and properties which apply to several individuals (Spinoza, 1972, II p40, sch. 1). However, common

notions differ from abstract ones, in that instead of describing the shared extrinsic properties of a particular group of beings, a common notion indicates the affects which pertain to several beings in their concrete mode of being and behaviour in interaction with other beings (SPP, 80).[12]

The inclusion of ideas and images in bodily affections allows Spinoza to distinguish individual perspectives from the perspective of the whole of nature (or of the pantheistic God). Finite individuals can experience affections as external passions, but from the absolute perspective, there are only actions, as there is nothing external to this perspective (Spinoza, 1972, I, p17, dem.). Similarly, the nature of affects also depends on the perspective. Within a limited, individual perspective, the same bodily event may take on a different nature, depending on the images and affects associated with it. For instance, the character of hitting with a hammer changes completely depending on whether it is associated with the deliberate and productive action of hitting a nail, or with the hateful desire of injuring someone (cf. Spinoza, 1972, IV, p59, sch.).

[12] Spinoza further defines the third kind of knowledge as *intuitive* (*scientia intuitiva*), which consists in adequate ideas and concerns the essences of singular things or modes (Spinoza, 1972, II p40, sch. 2). It is not possible to discuss the third kind of knowledge in detail within the confines of this work, but it is useful to briefly consider its relation to the second kind of knowledge, which I argue is more relevant from the point of view of Deleuze's philosophy. Deleuze sees the second kind of knowledge as the indispensable pathway that leads towards the third kind of knowledge (SPP, 131). The second kind consists in knowledge of increasing generality, while the third kind attains the singular essences of things. The crucial difference between these kinds of knowledge is that while the second kind may be perfectly general, it concerns things in their finite *existence*, while the third kind of knowledge is atemporal and eternal. The second and third kinds of knowledge both consist in adequate ideas, which are actively formed by the mind. However, the ideas of the third kind are not merely general but immediately connected to the whole universe of ideas (i.e. to the Spinozan God). This knowledge is 'intuitive' in that it completely absorbs and assimilates the second kind of knowledge into actively formed ideas, which directly express singular essences. However, this intuitive understanding must be distinguished from the sensory impressions of the first kind, which are intuitive in the sense of passive contemplation or association. Furthermore, although experience and experimentation are necessary stages paving the way for the third kind of knowledge, this knowledge does not presuppose a complete empirical knowledge of the world, but on the contrary, adequate ideas concerning singular essences. Thus, what changes with the third kind of knowledge is the nature of knowing rather than the amount or extent of knowledge (Spindler, 2009, 86–87). Most importantly, as a result of forming adequate ideas, the individual's power increases as her active affects supersede passive ones (SPP, 41).

1.8.3 Intensity as a degree of power

Although Spinoza himself never uses the term 'intensity', Deleuze introduces the term as a synonym for Spinoza's formulation 'part of God or nature's infinite power' (*pars infinitae Dei seu Naturae potentiae*) (Spinoza, 1972, IV, p4, dem.). Thus, for Deleuze, the power of a mode or of an individual is an intensive degree within the total spectrum of power. The concept of intensity makes it possible to see the total power at once as indivisible but nevertheless as having parts (Spindler, 2009, 49, n7).

Deleuze bases the assimilation of a part or degree of power with intensity on the alleged influence of scholasticism on Spinoza, concerning the problem of the 'intrinsic modes' or degrees of a quality (SPE, 173). As we saw above, the expressions 'latitude of a form' and 'intension and remission' referred to this range of variation within a quality or property (or 'form'). Indeed, the changes between such degrees were referred to as *intensio et remissio*, 'intensification and remission' of the quality as an increase or decrease between degrees of the quality (Davenport, 1999, 401; Stachowski, 1992, 46–47).

Intensity as a degree of power or potential defines an *individual* (SPE, 179–81). This Spinozan notion of the degree of power is crucial for Deleuze's concept of individuation both in his early and later work, as we saw in Section 1.6. On the other hand for Spinoza, affects express the variation of an individual's power (Fr. *puissance*; Lat. *potentia*). 'By affect I understand affections of the body by which the body's power of acting is increased or diminished, aided or restrained, and at the same time, the ideas of these affections' (Spinoza, 1972, III, def. 3). As we saw above, in the Spinozan context, Deleuze primarily reserves the term 'degree of intensity' for singular essences as participating in the total power of God and nature. However, he also characterises the affective variation of an individual as *intensive*, due to the intrinsic nature of the variation (SPE, 213, 274–275; SPP, 171). Furthermore, later

in *A Thousand Plateaus*, affective variation is consistently described as intensive (MP, 314, 318, 508). I argue that this is a necessary extension of the concept of intensity insofar as affects are the essential expression of an individual's power, and the range of affective variation is determined by the individual's power: the maximum of affective variation corresponds to the individual's complete activity, while the minimum corresponds to complete passivity. Indeed, affective variation is intrinsic and gradual, and hence, intensive.[13]

The individual can in principle be any being existing in time and space, but the intensive degree of power essentially defines the individual by its ability to be affected and to act.[14] Thus, it is different from an essentialist perspective, where an individual is defined in terms of its actual form and properties, or its genus and species. Here we can already note as a general guideline that an essentialist notion of individuation focuses on extensive features, while the dynamic or affective perspective concerns intensive ones.

According to Deleuze, intensity constitutes a field of distinctions which specify, or rather, individuate an individual. This idea is common to both *Expressionism in Philosophy* and to *Difference and Repetition*. However, in the former work, Deleuze develops the theme strictly within a Spinozan framework, while in the latter work, the Spinozist account seems to provide only latent conceptual guidelines. More precisely, in the Spinozan context, intensity characterises the sphere of potentials and essences, within which individual essences are distinguished from one another as degrees or intensities in a single continuum (SPE, 179–81). In this respect, the most significant aspect of intensity lies in its specific principle of *intrinsic* distinction

[13] In the context of Spinoza's philosophy, one must remember that a degree of power corresponds to an individual essence, and consequently, the individual affective variation must be seen as happening within the degree of power corresponding to this essence. That is, affective variation does not for Spinoza imply a multitude of essences corresponding to this variation.

[14] This is also one of Aristotle's definitions for potentiality or *δύναμις* (Aristotle, 1961, 1046a). However, Aristotle's concept of potentiality also has connotations of *possibility* (a possible state of affairs, a possible predicate), which should be distinguished from Spinoza's and Deleuze's more physical and affective conception of potentiality as power (capacity for acting and reacting).

between degrees, different from the *extrinsic* distinctions based on extensive parts of the individual.

For Deleuze, intensity defines a field of individuation: intensity is what specifies, distinguishes or indeed individuates an individual essence or power. Spinoza refers to the empirical individual as a modification or 'affection' of the single substance (God or nature), and the individual or singular essence as part of the total infinite power of God or nature (Spinoza, 1972, I, ax. 5; IV, p4, dem.). Accordingly, the existence of an individual as such does not provide the logic of its individuation, but instead presupposes it. Indeed, Deleuze argues that we can distinguish existing things and their empirically appearing differences only insofar as their essences are already supposed as distinct (SPE, 179; SPP, 119). According to Deleuze, these essential distinctions concern the powers of individuals as part of the total continuum of powers. Hence, the distinctions are intensive, since they refer to a dimension of intrinsic variation in degrees, their latitude. Deleuze refers by the term 'intensity' to a degree of such variation. This intensive variation must be distinguished from extensive or extrinsic properties and distinctions, pertaining to the finite constitution of individuals, divisible into a multitude of parts, which enter into mechanical, kinetic relations of speed and slowness (longitude). Furthermore, it indicates the dynamistic nature of Spinozan essences – essence is power, and individual essences are the degrees or intensities of the power of acting (Fr. *puissance*, Lat. *potentia*) (Spinoza, 1972, I, p34; III, p7, dem.; IV, p4, dem).

As we saw above, the attributes of substance constitute the extensive dimension of modes as the extended bodies and the corresponding ideas of all individuals. However, attributes also express the essences and power of the substance (Spinoza, 1972, I, def. 4). Accordingly, the attributes have an affective dimension, defining what they are *capable* of, their power or potential. Spinoza calls this dimension the essence of modes and assimilates it with their power (*potentia*). As we have seen, Deleuze emphasises the Spinozan definition of essences of modes as intrinsic

modes and parts of the total power of God (SPP, 99–100). Deleuze further argues that the intrinsic mode of power must be understood as a degree. Accordingly, Spinozan individuation must, according to Deleuze, be defined as an intrinsic but quantitative distinction between intensive degrees of power or intensive quantities. 'Individuation is in Spinoza neither qualitative nor extrinsic, but quantitative and intrinsic, intensive' (SPE, 180/197).

Deleuze emphasises the quantitative nature of intensity but distinguishes it from extensive quantities. As we saw earlier in relation to intensive space or *spatium*, Deleuze thus distinguishes quantity from extensity, making the latter only a subcategory of quantity (see Subsection 1.4.5). In fact, this distinction was already made in scholasticism, but intensity was not systematically associated with quantity, as intensity (or intension, intrinsic mode, degree, latitude) was commonly conceived of as a variant of *quality* (cf. Maier, 1968; Jung, 2010). Deleuze refers to Duns Scotus as the most relevant developer of this concept (SPE, 173). Wolter and Jung also affirm that Scotus was the first to suggest a quantitative conception of the variations in quality or intensity (Wolter, 1990, 37; Jung, 2010, 554; see Duffy, 2006, 37). However, it was only in the fourteenth century that the quantitative analysis of qualitative variation became more common, notably in Nicole Oresme's and the Oxford Calculators' work (Jung, 2010, 553).

As we have already noted, the quantitative nature of intensity can be grasped by comparing in terms of *more and less*, e.g. in the case of heat or brightness. According to Deleuze, the dynamic quantitativity of an intensive difference is not reduced to a numeric comparison based on a unit of measurement. Still, intensive differences are essentially quantitative, and they cannot be subordinated to apparent qualities. That is, intensity should neither be understood as simple variation within a quality as in the Aristotelian and scholastic tradition, nor should the difference in intensity be reduced to a qualitative difference, as in Bergson's analysis.

Deleuze illustrates the difference between intensity and extensity by means of an example commonly used by medieval philosophers as well as by Spinoza (SPE, 178–79). Imagine a white wall. Imagine you draw two figures on it, for instance human figures. Now, you can easily come up with distinctions between the two figures and their parts (one of them has longer arms, the other is taller etc.) or for instance, concerning their respective positions on the wall. According to Deleuze, these differences constitute extrinsic distinctions, which are based on the extensive features and parts of the figures and the wall. Furthermore, the figures themselves are painted on the wall as extrinsic parts, since the wall was there before the figures. However, according to Deleuze, there is another kind of distinction embedded in the composition, namely the different hues of white on the wall, generated by the exposure to light, shades, the texture of the wall etc. These would be intrinsic distinctions. Namely, the different hues of white are due to the variation in the intensity or in the behaviour of the light. Thus, they cannot be compared on the basis of extensive parts, unlike the two drawn figures. Instead, the different hues are intrinsic variants of the same colour and as such they can be distinguished only in virtue of the principle of their production, the power of which they are degrees.

Deleuze explicitly characterises the intensity of light as intrinsic variation, but it would seem that colours could also count as such intrinsic variations of light. That is, a particular colour as radiation is an intrinsic modification of the radiation of white light. Naturally, light consists of various dimensions, its colour depending on the frequency of radiation and its intensity in the narrower sense on luminosity. What is essential here is that we can distinguish two quantitative logics or two kinds of quantity within phenomena: an intensive kind appearing as intrinsic degrees and an extensive kind appearing as extrinsic parts. Deleuze also illustrates the distinction between intensity and extensity through the difference between Newton's theory of colour and that of Goethe. Newton approaches colour as an extensive part of light,

visible in the spectrum.[15] Goethe, on the other hand, studies colour as variation of light and darkness, where each colour is a degree of this variation rather than a separate part of a supposed range of colours. (cf. C1, 73, 77–80)

Apart from the difference between intensive and extensive quantities, it is important to distinguish intensities from qualities or qualitative properties. Intensive quantities are always expressed as qualities, but according to Deleuze, this is simply the result of explication and of the accompanying differenciation into quality and extension as a kind of cancelling of the intensive potential, as we saw earlier in Section 1.4. In fact, Spinoza's somewhat unintuitively chosen term 'attribute' can be seen as referring to the *qualities* of the substance (SPE, 173). Thus, 'extended' (*extensa*) and 'thinking' (*cogitans*) are qualities that apply to everything that exists. Furthermore, this universality entails that the qualities are unlimited, or that they correspond to 'modal' quantitative infinities, i.e. quantities relative to the modes or existing individuals (SPE, 37, 173).

Just as qualities are indivisible, the attribute-qualities 'extendedness' and 'thinking' are indivisible as such, but the finite modes of these attributes – bodies and ideas – are divisible into parts and are themselves parts of larger wholes. By infinity, Spinoza does not mean an endless sequence, but rather autonomy and absence of limits. That is, the extended world is not limited by anything else and thus it cannot be divided into finite parts either, as then the whole would also be finite. Still, the modes of attributes are parts of a larger whole in two senses: (1) finite modes consist of extensive parts and are themselves parts of larger ensembles, (2) a mode's power is an intensive part of the total power of the substance. Deleuze suggests that these two types of division into parts, or 'participation', correspond to two types of infinite quantity: intensive and extensive (SPE, 166, 174). While extensive quantity refers to the mutually external or extrinsic parts of existing beings (modes and

[15] From the point of view of contemporary physics, Newton's view corresponds quite directly to the idea of colours as different wavelengths or frequencies of light, also an extensive characteristic of light. However, the theory of light as waves would not have been compatible with Newton's conception of light as corpuscular.

their divisible parts), intensive quantity refers to degrees of power corresponding to these beings. How is this Spinozan power effectuated? We noted above that the effectuation of power is tightly connected to the affectivity of an individual, but we have yet to discuss in what sense the individual potential subsists in its constant realisation in affections. Also, we will see in what sense the power is realised as different intensities or degrees.

1.8.4 Intensity as a concrete, quantitative potential

Spinoza defines the attributes as essences of the substance and likens them to qualities or properties. However, Deleuze emphasises the fact that for Spinoza, essence is *power* (Fr. *puissance*, Lat. *potentia*). That is, Spinoza conceives the essences of all individuals as different degrees of the total *power* of existing and acting (SPE, 166).[16] Thus, for Spinoza and Deleuze what is *essential* for all beings is not what they *are* but what they can *do*, what they are capable of. The Spinozan *existence* refers to an individual insofar as it is a multitude of extensive parts in space and time. By contrast, Spinoza reserves the term 'essence' for the individual's power and abilities, which are manifest as the affections and affects it is capable of.

Furthermore, the individual degrees of power all mutually imply each other: being is invested with an infinity of powers or potential, of which different individuals are manifestations and of which their essences are intrinsic parts or degrees. However, this power can exist and be expressed only in the kinetic relations involving the individual extensive parts, without which the individual literally does not exist. Namely, existence consists precisely of beings possessing a multiplicity of extensive parts in space and extensive duration in time. Nevertheless, Deleuze speaks of power as 'subsisting' or 'insisting', meaning that it is not reduced to its actualisations, but constitutes a distinct, intensive dimension of the individual.

[16] Cf. Spinoza, 1972, I, p34; IV, p4, dem.: 'God's power is identical with his essence'; '[...] the power of man, in so far as it is explained through his own actual essence, is a part of the infinite power of God or Nature, in other words, of the essence thereof.'

Even though Spinoza assimilates essence with power and potential, his concept of essence might still evoke the idea of a mere abstraction or of a possibility à la Aristotle. However, Deleuze asserts that 'in Spinoza, essences have a physical existence or reality', an existence determined by their cause (SPE, 176–77). According to Deleuze, this means that Spinozan essences are not mere possibilities, but concrete, quantitative potentials that imply one another and 'are involved in the production of each' (SPE, 180–81/198). Thus, a concrete form of production or process envelops or enfolds all its degrees in it, not as logical possibilities but as parts of a physical range of variation. Also, from the intensive point of view, the cause of variation and gradation is what determines the differences in a phenomenon, as in the case of the different intensities of light. That is, variation between individuals is not based on an external comparison, but on a kind of genetic point of view, focusing on what produces the appearing differences, i.e. their cause. While the Aristotelian, essential potentiality refers to a possibility of existence, which is assimilated to a form as the goal of a process, Deleuze argues that the Spinozan power is more like a dynamic principle of production or genesis – how a phenomenon is produced. Traditional essentialism adopts the outcome of a process as the model according to which the potential is conceived. By contrast, in the Deleuzo-Spinozan dynamic conception of potential, the variation of a productive process is taken as primary, and a particular outcome of the process of variation is a mere expression of the variation in particular empirical conditions, not its sole goal. Furthermore, according to this view, the different outcomes are determined by an intrinsic logic of production and individuation, producing the variation.

Interpreting the dimension of essence and power in terms of gradation also has the advantage of accounting for the idea of the infinite multiplicity of powers inherent in being. The multiplicity of power is thus not akin to the apparent qualitative diversity of beings, but to productive processes, e.g. our example of the behaviour and variation of light. Thus, it is also easier to conceive of an infinite range of

essences, all of which do not even come to exist, as there is also an infinity of intensities of light that are never actualised, although they are physically implicated in particular light rays as their form of production (cf. SPE, 179). However, we must bear in mind that Spinoza distinguishes this potentiality of essences from mere (logical) possibility and argues that the unactualised essences are implied by other existing beings (Spinoza, 1972, I, p8, sch. 2; II, p8 and cor.). According to Deleuze, the essences of modes are not merely possible but, on the contrary, *physically* real (SPE, 175). By this he means that essences as degrees of power are not merely non-contradictory possibilities, but intrinsic parts of a physical logic of production and thus implied by it as its variations or modifications. Of course, these modifications can be construed as mere logical possibilities, but for instance in our example of the radiation of light, this would entail neglecting the way different colours and intensities are produced and consequently ignoring their concrete, interconnected and processual mode of being (cf. SPE, 180).

It is also important to stress the quantitative point of view inherent in the Spinozan notions of power and degree of power. Namely, the potential of a being is indeed a degree within a range of potentials, which includes greater and lesser powers. Thus, the number of affections one is capable of is not a mere random collection of skills, but more like dimensions or degrees of freedom composing an individual and strictly corresponding to the structure of the individual body. This notion of intensive quantity detaches the idea of potentiality from the Aristotelian connotations and brings it closer to a concrete, physical potential, which constitutes an intrinsic mode of being of a material process. Moreover, the intrinsic nature of this intensive potential distinguishes it from extensive, measurable quantities, characteristic of static objects of representation.

1.8.5 Uexküll and animal affects

Deleuze sees Spinozan ethics as a kind of *ethology*, the study of animal behaviour. I argue that this association is not merely a play on the word 'ethos', but grasps an important feature of Spinozan ethics. Indeed, at first glance, from the viewpoint of the average contemporary reader, the title of Spinoza's seminal work seems almost arbitrary with regard to its content. Where are its moral guidelines for doing the right thing? However, according to Deleuze, Spinoza's ethics does not concern general moral rules, but the nature of the interaction of an individual with other beings (SPP, 33–37, 168). Deleuze formulates this question as: 'What is a body capable of?' That is, what kinds of influence is a body capable of receiving and exerting? (SPE, 198, 235–36) This question provides the backdrop to Deleuze's concept of ethics as ethology: Deleuzean ethological ethics studies a being on the basis of its interactive abilities, its affectivity.

> [...] Each thing, on the immanent plane of Nature, is defined by assemblages of movements and affects which it enters, whether these assemblages are artificial or natural. Long after Spinoza, biologists and naturalists will try to describe animal worlds defined by affects and the capacities for affecting and being affected. For example, J. von Uexküll will do this for the tick, an animal that sucks the blood of mammals. (SPP, 167/124, transl. modified)

For Deleuze, Uexküll's ethological account of the tick's life-world is profoundly Spinozan. The tick reacts simply to three stimuli (Ger. *Reiz*): (1) the smell of butyric acid produced by the mammal, (2) the sensation of hitting something (the mammal) and (3) the warmth of the mammal. Each of these stimuli triggers a particular characteristic (*Merkmal*) or affect: letting go of the twig, running around on the skin, cutting into it. 'Out of the vast world which surrounds the tick, three stimuli shine forth from the dark like beacons, and serve as guides to lead her unerringly to

her goal' (Uexküll, 1934, 7–8). From the ethological point of view, Deleuzo-Spinozan affects constitute the transformative ways in which beings respond to phenomena. Thus, affects define the dimensions of a being's world and of its mode of being. In brief, I argue that affects express the individual's capacities of affecting and being affected, as transitions or becomings within a particular assemblage. The concept of affect refers to the way a being's body and mind react to a stimulus, and an affect thus presupposes and includes the affections that trigger it and also the affections it itself produces as actions or reactions. We will see later in Section 6.2 that for Deleuze and Guattari, an affect always depends on a particular assemblage which gives rise to it in the interaction between an element of the assemblage and its surroundings within the assemblage.

1.8.6 Affects distinguished from dispositions and power

In the vocabulary of analytic philosophy, one could assimilate affects to 'dispositions' or 'dispositional qualities/properties', but one should also bear in mind three specifications concerning such assimilations. First, dispositions are often formulated as expressions of universal laws of nature ('water boils at 100 ℃', 'water has the *disposition* of boiling at 100 ℃'). In such formulations, the individual being with the disposition is a mere instantiation of the general law. By contrast, affects define the concrete mode of being of an individual in terms of its capacities in interaction with other beings. Second, dispositions are usually considered in terms of hypothetical judgments, which express logical relations between states of affairs ('if the water is at 100 ℃, it boils'), whereas affects are concrete reactions of the individual to particular circumstances. Indeed, the affect is not an isolated possibility but essentially an aspect of the whole mode of being of water, in a kettle for instance, and ultimately it is implicated in all the water in the world. Finally, dispositions primarily express logical possibilities. This character of dispositions would seem to be consistent with their characterisation as *qualities* or *properties*, as one can come up with an end-

less list of arbitrary dispositions, which a portion of water is capable of (taking a particular shape etc.). By contrast, affects express the capacities which are specific to water due to its physical mode of being and which imply several interconnected 'dispositions'. I argue that dispositions are essentially logical possibilities based on our representations of laws of nature, while affects are physical modifications of a being, immediately linked to physical interaction.

There is also a common confusion concerning the notion of 'affect' among Deleuzean scholars and affect theorists: affects are confused with the power or capacity of an individual.[17] In reality, affects are both for Spinoza and Deleuze precisely *what* an individual or being is capable of, that is, the *expression* of its power as a change in the individual's mode of being (SPP, 167). Accordingly, capacity or power should not be confused with the actual action or change in the mode of being which the body is capable of. Of course, for Spinoza, the individual's power and its realisation are profoundly intertwined, in at least two ways. First, Deleuze argues that the individual power is essentially power of acting, which manifests itself constantly as affectivity, as passions and actions.[18]

> [...] In the case of substance, the capacity for being affected is necessarily filled by active affections, since substance produces them (the modes themselves). In the case of the existing mode, its ability to be affected is also realized at every moment, but first by affections (*affectio*) and affects (*affectus*) that do not have the mode as their adequate cause,

[17] I thank Kasper Kristiansen for pointing out this widespread confusion.

[18] Spinoza does not give a simple formulation of the relation between power and affects and their effectuation or realisation, but I argue that Deleuze is justified in assuming that the capacity for being affected is constantly effectuated. Namely, first, Spinoza does say that the essence of God implies existence, as an infinite power of existing and acting (Spinoza, 1972, I, p11; p34, dem.). For Spinoza, God is pure action. Second, human power as part of this total power is also essentially active, even though this concrete activity of power does not entail the existence of human beings or other finite individuals, but only their essences (Spinoza, 1972, p24). Nevertheless, I argue that provided that a certain finite individual exists, its power is essentially expressed as affectivity. Due to the finitude of the individual existing among other individuals, its capacity for being affected is primarily not realised by active affects, but by passions caused by other individuals. Thus, there is a basic tension between the active essence of an individual and its affectivity which expresses this essence, but under the influence of other modes.

> that are produced in it by other existing modes; these affections and affects are therefore imaginations and passions. (SPP, 136/99)

Second, I argue that Deleuze also seeks to bind together the mutual variation of an external stimulus and the response to it; this he calls the capacity (*pouvoir*) for being affected (SPP, 40). However, even if this affective variation is a single process, its different aspects can still be distinguished and at the conceptual level the confusion of these aspects has absurd effects. To say the least, an individual's power is distinct from its variation and from its particular affective manifestations; otherwise an individual could not have passive affects. Also, one should be all the more wary of confusing affect with power, as the individual degree of power, 'potency' (Fr. *puissance*, Lat. *potentia*) and its actual manifested capacity for being affected (*pouvoir*, *potestas*) are often both rendered as 'power' in English (cf. SPP, 134/97). The careless Deleuzeans seem to include affects in the same undifferentiated group.

Following the Spinozan model, power, potential or potency (Lat. *potentia*, Fr. *puissance*) is for Deleuze always in action and in this sense *actual*, but there are several ways for the power to be in action. This is precisely where the notion of intensity comes in, for intensity as graded variation binds together the continuum of degrees ranging from the degree zero of power to eventual higher degrees. All these degrees are enveloped in the individual's mode of being and its environment, its assemblage. Indeed, the potential or power of an individual cannot be conceived solely in terms of its own autonomous capacities, as it is ultimately dependent on the encounters with external beings.

Affects should be distinguished from the individual's capacity for being affected and also from its potency (*puissance*). That is, an individual's potency defines the spectrum of its capacities. On the other hand, as existing, this potency is constantly in action (and thus not merely potential or dispositional). I will call this existing, actual form of power *capacity* (*pouvoir*). This capacity is constantly

realised, but it may take several forms within a single degree of power. According to Deleuze, the individual essence or degree of power defines a certain range of affective variation, and a constant capacity for being affected. However, within this capacity, the power of acting and the power of suffering occupy varying proportions. That is, an individual's mode of being may be dominated by passive affects or by active ones, depending on the extent to which it is the source of its own actions and thoughts. (SPP, 40–41) Accordingly, an individual's capacity is always completely effectuated as affections, but if this effectuation is dominated by passive affections, the individual is as if separated from its power or potency, from what it is ultimately capable of (SPE, 205). However, this potency is not something we can know in advance, but it can be only be known and attained through experimentation and by thus becoming active.

It would seem plausible that our affective capacity is constantly realised, as although we for instance do not contract our muscles all the time, they must retain a minimum level of activity in order to be able to contract in the future. Similarly, when we go to sleep, we do not lose all our powers, but simply adopt a lower limit of using them. Furthermore, this Spinozan framework also allows us to analyse changes in our abilities. Namely, if we consistently engage in either lying down passively or, on the contrary, in physical exercise, over time our power of acting will decrease or increase accordingly. Also, it would seem that any process of learning always increases our active affections and thus brings our capacity closer to our potential.

1.8.7 Beyond Spinoza

Deleuze's thought is profoundly shaped by key Spinozan notions. As we saw above, he finds in Spinoza a theory of individuation conceived in terms of intensive degrees of potential. However, especially in *Difference and Repetition*, Deleuze combines these insights with the more contemporary conceptions concerning dynamic systems – mathematical, physical and biological. In this dynamic analysis of individuation

he is inspired notably by Gilbert Simondon. Accordingly, in *Difference and Repetition*, Deleuze stresses the genetic and synthetic role of intensity: according to him, intensity is the origin of space and time and of the dynamisms involved in their local production.

In accordance with his emphasis on the intensive nature of dynamic systems, Deleuze argues that extensive properties (qualities and parts, Spinozan finite existence) are produced by intensive differences. He thus maintains the Spinozan distinction between existence and essence but elaborates on their relation and links them to generative processes and passive syntheses, a perspective virtually inexistent in Spinoza, although arguably compatible with it. The only thing Deleuze explicitly criticises in the Spinozan system is its conception of the substance as autonomous with regard to its modes, while modes are dependent on the substance (DR, 59). Deleuze sees this as a result of the primacy of the concepts of being, identity and unity in Spinoza's thought. By contrast, Deleuze proposes a processual reorientation of thought, where being is conceived as essentially processual and in terms of becoming, identity as an effect of difference, and unity as an aspect of multiplicity. I argue that the outcome of these modifications of thought is transcendental empiricism: the quest for the conditions of real experience from within this experience. However, as we will see further on, Deleuze's philosophy of affectivity remains profoundly Spinozan, and the Deleuzean affects can always be read as expressions of the power of the individual, or rather of individuation. In the next chapter, we will see the important role affectivity plays in *A Thousand Plateaus*, in Deleuze and Guattari's analysis of corporeality and machinicity, as well as in in their concept of assemblage. Furthermore, affectivity will be a key intensive element in our analysis of technics in Part II.

Chapter 2

Intensity in the ontology of *A Thousand Plateaus*

Although Deleuze's only lengthy presentation of his theory of intensity can be found in *Difference and Repetition*, I argue that many of the central concepts of *A Thousand Plateaus* (*Mille Plateaux*, 1980, the second volume of *Capitalism and Schizophrenia*) are characterised by intensity. In addition, as we noted above, the affective dimension of intensity as well as its Spinozan background are developed at length in this later work. It is necessary to study all the key concepts of *A Thousand Plateaus* in order to understand the role and scope of the concept of intensity in this work, as well as its implications for our understanding of the nature of materiality. Moreover, not only is the analysis of intensive materiality necessary for our analysis of technical knowledge in Part II, but I argue further that technicity is a crucial part of the analysis of materiality in *A Thousand Plateaus*.

Deleuze and Guattari thus continue to develop the theme of *individuation*. As we saw in Subsection 1.4.3 above, in *Difference and Repetition* Deleuze identified individuation as the characteristic process of intensity (DR, 317). As we saw in Section 1.6, in *A Thousand Plateaus*, Deleuze and Guattari appropriate the medieval

(in particular Duns Scotus's) concept of *haecceity*, or 'thisness'. A haecceity has the two dimensions of *longitude* and *latitude*. The former consists of kinetic relations of its parts, and the latter of affectivity – the power of affecting and being affected. Deleuze and Guattari use the concept of haecceity to analyse the individuation of *events*. I argue that haecceities essentially constitute *intensive modes of being* or modes of individuation. A haecceity may constitute the mode of being of various kinds of entities, e.g. of bodies or assemblages, but I argue that differently from these, the haecceity does not in itself have extended parts. Namely, although Deleuze and Guattari also define bodies and assemblages in terms of longitude and latitude, bodies and assemblages would always seem to involve extended parts. By contrast, I argue that a haecceity is exclusively a mode of individuation as an event or process (see MP, 318–23).

As we saw in Section 1.8, the distinction between longitude and latitude reformulates another important distinction we find in Deleuze's first work on Spinoza, *Expressionism in Philosophy* (1968). In the Spinozan context of the earlier work, Deleuze defines intensity as an individual degree of power which is expressed as particular affects (latitude) and kinetic relations between extensive parts (longitude) of the individual. Moreover, I argued that in *Difference and Repetition*, essentially the same distinction is made between the virtual differential relations which determine a phenomenon (longitude) and the intensive difference which individuates it (latitude). More generally, however, I argue that for Deleuze, intensity defines the nature of *immanent materiality*, a notion to which all the main discussions in *A Thousand Plateaus* are connected. Accordingly, I argue that Deleuze and Guattari seek to demonstrate the importance of this perspective of immanent materiality in all experience and action. In order to fully understand the nature of this immediate, intensive materiality in *A Thousand Plateaus*, the following concepts are of central importance: *stratification*, *assemblages*, *deterritorialisation*, the *plane of consistency* and the *abstract machine*.

Let us start with a brief overview of the connections between these concepts. *Strata* are relatively invariant, established realms of reality, e.g. the physico-chemical, the biological and the anthropomorphic realms. *An assemblage* is a dynamic mixture of such realms, involving objects, animals, plants and humans, and open to transformations through its dimension of *deterritorialisation*. Through deterritorialisation, the assemblages and the strata are in contact with the *plane of consistency*, which is the reference point of the processes of deterritorialisation. Finally, *abstract machines* are the operators of deterritorialisation within assemblages (MP, 636–37). Thus, the principal function of abstract machines is to steer the assemblages away from their stratified and territorialised patterns and bring them into an immediate interactive contact with an unformed materiality.

Through the concepts of deterritorialisation, abstract machine and plane of consistency, Deleuze and Guattari attempt to articulate the meaning of liberation from various forms of *capture* and *slowing down*. For instance, for Deleuze and Guattari, the *organism* is an imprisoned form of the body and of life; the *territory* is an imprisoned Earth; *substance* is an imprisoned matter or *phylum*; and a *stratum* is an imprisoned plane of consistency. An important strand in Deleuze and Guattari's work consists of the investigation of the ways in which humans restrict and limit their own thought, actions and existence. Deleuze and Guattari also seek to conceptualise the fundamental multiplicity of the structures and processes in reality. Accordingly, for them, there is no one general form of repression in human existence and thinking, and thus each domain must be addressed individually.

While Deleuze and Guattari's idea of metaphysical plurality and their manner of promoting it is arguably original with regard to the philosophical tradition, one may wonder if it is just a form of common sense? Does it not simply boil down to the view that for each domain we need experts who are specialised in that specific domain of problems? Moreover, does this fundamental dispersion of domains of existence and of their problems not ultimately entail the impossibility of philosophy? These

questions bring us to the second original aspect of Deleuze and Guattari's thought. Namely, they argue that although each domain and problem must be addressed separately, this should not predetermine the nature of our approach nor the outcome of the analysis. Namely, all domains can be connected in unanticipated ways. Furthermore, the liberating tendencies of a particular domain are not necessarily contained within the domain itself and consequently, these tendencies do not belong *a priori* to the expertise concerning that domain. What makes Deleuze and Guattari's theory more complex is that these limitations and imprisonments take place both at the level of reality and of representation. That is, on the one hand, the constraints of real phenomena are born within reality itself, but on the other hand humans also repeat and expand these constraints in their representations and models. This is why Deleuze and Guattari do not primarily question the scientific veracity of the theories they criticise, but they rather problematise the limiting forms of thinking which particular theories may endorse.

In addition to the concepts listed above, we will see that the concept of *machinic phylum* captures the variational nature of materiality, but the concept is also intimately linked to Deleuze and Guattari's discussion of technology. For this reason, I will explicate the concept of the machinic phylum and its role in respect of technics and materiality in Part II. But now we will take a look at the general themes of *Capitalism and Schizophrenia*, as Deleuze and Guattari present them in *Anti-Oedipus*. Namely, the theory of desire presented in *Anti-Oedipus* serves as an important background for the later conceptual developments of *A Thousand Plateaus*.

2.1 *Anti-Oedipus*: social desire

In *Anti-Oedipus* (1972), Deleuze and Guattari develop a psycho-social account of desire and the unconscious as productive forces. Notably, it is an anti-Freudian and anti-Marxist synthesis of Freud and Marx. In the Marxist tradition, Deleuze

and Guattari mainly criticise certain historicist and Hegelian interpretations that emphasise the role of social classes and the dialectical development of history. Their critique of Freud is more profound and complex, but it can be summarised as a resistance to the central position of the nuclear family in the psyche and desire. There is something similar in Deleuze's critique of Freud and Kant: both discover a kind of prodigious, unchartered territory (the unconscious and the transcendental, respectively), only to turn it into a scene for family dramas (Freud) or a theoretical warrant for all the received views (Kant).

In Deleuze and Guattari's eyes, the social and the political are not simply a public matter, although they are usually conceived in terms of nation states, economy and social institutions. That is, Deleuze and Guattari claim that socio-economico-political phenomena immediately involve the so-called private sphere of our psyche, of our desires and beliefs. Conversely, for them the psyche is not merely a private matter. Rather, the psyche and the unconscious 'invest' the social and the political directly; for them, desire and the unconscious are this act of investment itself. Thus, we can already discern the main Deleuzo-Guattarian contributions to Freudo-Marxism: the Marxist materiality of socio-economic production must also be seen as a psychic phenomenon of desire, and the Freudian psyche, desire and unconscious must be seen as societally and economically invested.

I argue that in *Anti-Oedipus*, the link between society and the individual is provided by Nietzsche's philosophy, which establishes a kind of ethics of forces and desire, functioning between individuals and thus making no distinction between individuals and groups or societies (AO, 75; cf. Klossowski, 1969, 122). Seeing reality thus as a dynamic, implicated order of varying relations of force or power was also a cornerstone of Deleuze's reading of Spinoza, as we saw above, in Section 1.8. We should here recall two Nietzschean notions adopted by Deleuze: (1) the affirmation of distance or difference as a positive entity, characterising the relations of force, and (2) 'the eternal recurrence' as the decentralised system of repetitive

but divergent variational processes. Smith argues that Deleuze and Guattari deploy these conceptions in their notion of *desiring flow*, inspired among others by the sociologist Gabriel Tarde, referring to primary processes of productive desire that are immediately societal and political (MP, 267–68). Still their analysis of society in terms of flows would seem to be for the most part their own contribution. (Smith, 2012, 160–61)

How is desire manifested or experienced? Here we return to the theme of immediate sensation. We already noted in Section 1.2 Deleuze's idea that an immediate sensation is essentially something troubling or disruptive. In *Anti-Oedipus*, schizophrenia is still the primary example of pure sensations, manifested as hallucinatory perceptions and delirious beliefs, just as earlier in *The Logic of Sense*. However, Deleuze and Guattari argue that these cognitions are based on more profound, intensive sensations, not being phantasmagoric in themselves, but which the schizophrenic cannot articulate in a controlled and organised manner (AO, 25). This does not make schizophrenia desirable, glorious[1] or truer than normal experience. Rather, according to Deleuze and Guattari, schizophrenia makes visible the basic, immediate nature of sensations and desire. Most importantly, the schizophrenic should not be defined by the lack of normal psychic functions, but as a positively distinct psychic condition. Deleuze and Guattari propose that all creative activity passes through a similar state of pure sensation (see AO, 74).

According to Deleuze and Guattari, desire functions as a correlation between the productive processes and an impassive *surface of inscription*. The surface of inscription provides the limits and a virtual reference point for the productive processes. Deleuze and Guattari analyse the productive processes in terms of connections between *desiring machines*, which we will discuss further on. On the other hand, they call the unproductive surface 'the organless body' or 'the body without organs' (BwO, *le corps sans organes*, *CsO*), introduced by Deleuze in *The Logic of Sense*.

[1] Pace Artaud's notion of the 'glorious body' of the schizophrenic (cf. LS, 108).

The organless body is a neutral and impassive element attached to desiring production and it limits the desiring processes only in the sense of constituting a ground level, or a level zero. The relation between desiring production and the organless body is a dynamic relation that Deleuze and Guattari identify as structuring the working of the human psyche as well as the functioning of societies. They call the societal form of the body without organs the 'socius' or 'the full body', whose nature varies according to the defining features of the society in question. For instance, in the case of capitalism, capital has the function of the body without organs, i.e. the surface of the pecuniary inscription of social production. What is important in this analysis is that the socius tends to acquire a central position in social dynamics and appears as the source (the 'quasi-cause') of wealth and of the productive processes. Nevertheless, Deleuze and Guattari argue that the socius or the full body is essentially only the principle of inscribing or registering social production. (AO, 16–17)

Anti-Oedipus develops the theme of intensity within the psychic realm, but paradoxically in terms of the affective *materiality* of the psyche. In this way, Deleuze and Guattari continue the corporeal analysis of psychic phenomena in terms of the concept of the body without organs. In addition to being the surface of inscription of desiring processes, in the psychic context the body without organs is defined as an immanent substance or matter, filling space to a certain degree (AO, 26, 390). Incidentally, this formulation repeats precisely Kant's doctrine concerning the nature of intensive quantities: intensive quantities constitute the empirical matter of sensation, filling the form of space to a certain degree.

> Now from empirical consciousness to pure consciousness a graduated transition is possible, the real in the former completely vanishing and a merely formal a priori consciousness of the manifold in space and time remaining. Consequently there is also possible a synthesis in the process

> of generating the magnitude of a sensation from its beginning in pure intuition=0, up to any required magnitude. (Kant, 1990, B208)[2]

Kantian sensation is the matter that fills extensive space to a certain degree, i.e. intensive magnitude. Thus, Kant defines intensive magnitude by its distance from a level zero, contrary to the extensive quantities defined in relation to a unit of measurement, e.g. intervals of space and time. In *Anti-Oedipus*, the body without organs takes the role of this intensive degree zero of materiality as a horizon of sensation and desire. Furthermore, the parts of the body without organs are no longer organs, but partial objects or the intrinsic degrees of its power.

Another central idea in *Anti-Oedipus* is that all psychic phenomena or structures, such as desire and delirium, are essentially in contact with their outside and oriented towards it. This means that the individual psyche is, according to Deleuze and Guattari, immediately connected to social and historical structures. This situatedness is essential in perhaps the most famous concept of the work, *desiring machine*, which deploys desire as a productive, material relation to its environment and its elements. Also, Deleuze and Guattari define the productivity of desiring machines in affective terms: the desiring machines only have affective states (AO, 470).

Deleuze and Guattari develop further the dynamic themes touched upon in *Difference and Repetition* and *The Logic of Sense*. In *Anti-Oedipus*, psychic and affective phenomena are analysed in terms of fields and gradients[3], inspired foremost by the biologist Albert Dalcq's dynamical approach to embryology, but also related to more modern dynamical systems theory (see DR, 323).[4]

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[2] 'Anticipations of Perception' (*Antizipationen der Wahrnehmung*) in *The Critique of Pure Reason* (Kant, 1990), cf. Section 1.2.

[3] The notion of *gradient* is ultimately a mathematical notion derived from differential calculus consisting of a vector expressing the rate of change or slope of a function with multiple variables. However, the notion has a wide use in engineering sciences as well as microbiology and embryology, expressing rates of change for instance in fluxes or in a potential on the two sides of a membrane.

[4] A dynamical systems approach has also been adopted in dynamic cognitive science and neo-Piagetian developmental psychology since the 1990s.

2.2 Multiplicities

In *A Thousand Plateaus*, Deleuze and Guattari propose to analyse phenomena as *multiplicities* instead of tracing their genetic constitution in terms of the passive syntheses of the unconscious and of desire, deployed in *Anti-Oedipus* (DRF, 289). As we shall see, this change of approach is also tightly connected to the aim of highlighting and elaborating the machinicity of reality. But what are multiplicities in the first place, how do Deleuze and Guattari define them?

> Multiplicities are reality itself and they do not presuppose any unity, they do not make up any totality, nor do they refer to a subject. On the contrary, subjectivations, totalisations and unifications are processes that are produced and appear in multiplicities. The main characteristics of multiplicities concern their elements, which are *singularities*; their relations, which are *becomings*; their events, which are *haecceities* (i.e. individuations without a subject); their space-times, which are *smooth* spaces and times; their model of realisation, which is the *rhizome* (as opposed to the model of the tree); their plane of composition which constitutes *plateaus* (zones of continuous intensity); the vectors that traverse them, constituting *territories* and degrees of *deterritorialisation*. (DRF, 289–90, transl. JT)

I argue that the main methodological move here consists in substituting the concept of machinic multiplicities for the traditional concept of *synthesis*, which has been associated with unity, subjectivity and totality. These three concepts play a particularly pivotal role in Kant's account of the conditions of knowledge, and they acquire a metaphysical status in subsequent German idealism.[5] For Kant, subjectivity serves as the ground for the synthetic unity of experience, which he deems as

[5] For an example of Hegel's use of the concepts of unity and totality, see Beiser, 2005, 94.

necessary for the possibility of knowledge and experience. Furthermore, this unity culminates in the idea of totality, which is the ultimate rational condition of knowledge about reality. In different ways, these three notions have been supposed to be essential prerequisites for the possibility of knowing reality: reality must appear to a conscious subject; it must be unified in experience in order to be identifiable; it must constitute a totality into which its elements and parts can be integrated. In contrast to this idealist view, Deleuze and Guattari claim that unity, subjectivity and totality are local *effects* or by-products, which are generated within particular multiplicities. Consequently, these concepts can only have a relative value. We will discuss the concept of synthesis and its role in Deleuze's work in detail in Chapter 3.

If we grant that Deleuze and Guattari offer their conceptual system of machinic multiplicities as an alternative to the concept of synthesis, it remains to be seen what the positive contribution of the machinic concepts listed above is. What is the general positive characteristic of singular elements, relations of becoming, haecceity-events, smooth space-times, rhizomatic distribution, continuous plateaus and vectors of deterritorialisation? I argue that they express an immediate, dynamic materiality, which can be generally qualified as *intensive*. Furthermore, the core of the theory of multiplicities is basically the same as the one already found in *Difference and Repetition*, but in Deleuze and Guattari's later work the use of the term is more varied. Namely, in *A Thousand Plateaus*, they approach different concrete phenomena and domains as multiplicities, while in *Difference and Repetition*, 'multiplicity' refers to *virtual ideas* as well as to the *unconscious*, an aspect elaborated further in *Anti-Oedipus*. In fact, I argue that the notion of multiplicity is a development of Bergson's theory of *memory* as a cosmic, virtual background serving as a reserve responding to present needs. In fact, Deleuze and Guattari refer to Bergsonian duration as an intensive multiplicity, distinguished from the extensive multiplicity of extension (MP, 604). In *Difference and Repetition*, the association of the concepts

of *the virtual* and *pure past*, reveals a Bergsonian inspiration. In the psychoanalytic context of *Anti-Oedipus*, the unconscious character of this virtual background is emphasised. However, in *A Thousand Plateaus* the locality, particularity and complexity of the contexts of action is given a more prominent role. Multiplicity is no longer a theoretical supposition concerning the nature of things, as it tends to be in the earlier texts. By contrast, Deleuze and Guattari's idea of multiplicity is now concretely connected to their method of plunging straight into a particular domain and its complex field of problems and concepts.

Despite their interest in analysing a multitude of domains from an immanent perspective, Deleuze and Guattari are not merely proposing a pure empiricism of multiplicities, simply describing the specific properties of different systems. Indeed, there is a 'transcendental' element involved in their approach, in the sense that they study features of systems which transcend or flee the dominant forms of the systems. I argue that the *plane of consistency* is this transcendental element which constitutes a horizon for the transformations and novelty in reality. Nevertheless, Deleuze and Guattari take great care in safeguarding the immanence of their philosophical system. Accordingly, they distinguish this transcending or fleeing character of the plane of consistency from *transcendent*, general structures. They adopt the distinction between 'transcendent' and 'transcendental' from Kant. For Kant, 'transcendent' characterises concepts that are altogether separated from empirical experience (soul, world, God); 'transcendental' characterises concepts whose reference cannot be found in immediate empirical experience, but nevertheless are immanent forms of experience and knowledge (the categories, e.g. causality). Similarly, Deleuze in all his work criticises abstract, general structures of representation for their 'transcendence', but sees as a necessary element of philosophy the 'transcendental' perspective, which moves immanently beyond the actually present contents of experience and habits of thought while maintaining its contact with this actuality of experience. However, Fredrika Spindler emphasises that this immanent contact

between thought and empirical experience is essentially creative, as thought can only proceed immanently by articulating problems based on the initial chaos of experience (Spindler, 2010, 155).

Deleuze and Guattari express this immanence and lack of transcendence by speaking of 'flat multiplicities' and of '$n-1$ dimensions'. With these expressions they refer to Riemannian differential geometry, which presents a universal way of studying spaces and their variation from the intrinsic point of view of the space in question. The Riemannian point of view is intrinsic because manifolds – 'multiplicities' in Deleuze's words – can be studied 'without reference to a global embedded space', unlike in traditional, Euclidian geometry (DeLanda, 2002, 12). Thus, the formulation '$n-1$' indicates precisely this lack of an embedding dimension, which proves to be a superfluous element in the analysis. (DeLanda, 2002, 11–13) I argue that for Deleuze, this lack of an embedding dimension essentially entails a lack of *transcendence* – the lack of a general dimension of representation of phenomena. Conversely, for Deleuze the lack of a dimension of representation means that the multiplicity or phenomenon is approached immanently, by its intrinsic mode of being. Another important feature of the multiplicities' immanence is that multiplicities are connected to each other locally, little by little, by their borders as if by a tangent or gradient. I argue that for Deleuze and Guattari, the plane of consistency is the immediate context for the dovetailing of different multiplicities.

In *A Thousand Plateaus*, Deleuze and Guattari thus still evoke a *metaphysical surface of registration and inscription*, in the form of the plane of consistency. However, as we will see in Section 2.6, this surface is strictly local, and its role and nature are strictly relative to the multiplicity in question (MP, 307–08). In *Anti-Oedipus* the *body without organs* had this systemic role, and in *A Thousand Plateaus* the body without organs still continues to have this role in the context of the inscription of desire, or as an implicit reference point for the workings of desire (MP, 109). However, now the concept of body without organs is accompanied by

two more general concepts: the concept of *plane of consistency* and the concept of *phylum*.[6] The plane of consistency has the same function as the body without organs, but the plane of consistency constitutes the context for all bodies without organs, and thus it is not identified with any particular, finite context like the body without organs. Accordingly, in *Anti-Oedipus*, Deleuze and Guattari assimilate the body without organs with the 'full body' (*corps plein*) of the *socius*, expressing the dominant nature of the society in question, e.g. despotic or capitalist. The full body, the socius, thus appears as the basis of the social system and as the source of its wealth. In the most recent case, *capital* has this role in the global capitalist society, serving as a virtual surface of inscription that quantitatively registers economic interactions. Also, capital appears as the basis and embodiment of wealth, although it could not have this role without the network of resources, workers and consumers.

It is important to bear in mind two central aspects of Deleuze and Guattari's use of the concept of body without organs. First, the organless body is constantly present in the operations of desire as its immediate correlate (its surface of inscription). Second, there is a multitude of organless bodies, and this multitude is subject to significant local variation. Thus, the body without organs and the plane of consistency are not mere synonyms, but their functions overlap, making it possible to use them interchangeably, depending on the context and degree of precision.

I argue that Deleuze and Guattari's concept of *phylum* reformulates the concept of plane of consistency from a material perspective: the concept of phylum accounts for the material continuity in technology and technological objects. In fact, Deleuze and Guattari also characterise *metal* as a body without organs, a matter in flux (MP, 511–12). Indeed, metal is a privileged reference point of technological oper-

[6] Deleuze and Guattari also characterise the concepts of 'the earth' (*terre*) and 'smooth space' (*espace lisse*) as surfaces of inscription (MP, 483, 609). They refer to the earth as the reference point for the lineages of primitive societies; similarly, in *Anti-Oedipus*, the earth was considered the defining *socius* or 'full body' of primitive societies. On the other hand, Deleuze and Guattari essentially use the concept of 'smooth space' to articulate the spatial characteristics of the plane of consistency.

ations, their *surface of inscription*. Technological development traces a contingent continuum of material inventions, which Deleuze and Guattari call 'a phylum'. A phylum can divide into several phyla and also rejoin other lines of development. In this respect it is important to note that with the concept of plane of consistency, Deleuze and Guattari refer to a shared dimension of transformative potential for all processes, which also enables the mutual connections between different phyla.

Finally, Deleuze and Guattari speak of multiplicities in their concrete, heterogeneous existence as 'machinic assemblages'. We will discuss this notion in detail in Section 2.8. The composed nature of machinic assemblages underlines Deleuze and Guattari's constructivist approach to desire. In addition, for Deleuze and Guattari, desire essentially always unfolds in a particular situation and does not exist in the abstract, nor simply 'in the head', nor in an individual body either. According to them, desire is essentially creative and productive, and it is defined by the concrete, local situation in which it acts and by the nature of its actions. Here it is useful to consider the coincidence of this approach with Sartre's existentialism and Marx's materialism. The existentialist aspect concerns the priority of existence over essence in Deleuze and Guattari's theory of desire: desire is assembled and developed before it corresponds to any representation or model. Similarly, in confluence with Marx, desire is defined by its concrete, material deployment instead of expressing a pre-existing ideology (cf. Marx, 1991, 17). All in all, this positive, constructive nature of desire which is introduced in *Anti-Oedipus* is still essential in *A Thousand Plateaus*, as the object of desire is not defined negatively through a lack or absence but positively as the unfolding of potentials within an assemblage.

2.3 Body without organs

In *A Thousand Plateaus*, Deleuze and Guattari build on their earlier account of the body in its immediate, intensive mode of being, or the *body without organs*. As we

have seen, they still use the concept in the same sense as in *The Logic of Sense* and *Anti-Oedipus*. According to Deleuze and Guattari, the body without organs is an immediate and local correlate of desire. Furthermore, with the concept of body without organs, Deleuze and Guattari seek to cast light on the dynamic and affective dimension of bodies, as opposed to the extended and organised aspects of the body as an organism (MP, 196–97). Thus, to be precise, the problematic notion is precisely the one of *organism*, not organs as such. Indeed, the exact formulation 'body without organs' (*corps sans organes*) is a direct homage to the dramatist and essayist Antonin Artaud, who sought to develop a theatrical expressivity of immediate affectivity and corporeality, or the 'theatre of cruelty'.

Deleuze introduces the concept of the body without organs in *The Logic of Sense*, where the concept characterises bodily sensations in schizophrenia, and also immediate bodily expressivity in the dramatist Antonin Artaud's works (see LS, 108). Deleuze adopts the phrase 'body without organs' from Artaud's work 'Pour en finir avec le jugement de dieu' (Artaud and Grossman, 2017, 104), where it refers to the liberation of the human body and its activity from symbolic and concrete forms of control and organisation (LS, 108). More precisely, according to Deleuze, the concept of body without organs evokes a schizophrenic mode of experience, where the intermediary surface of sense is bypassed and words and bodies interact immediately. Words literally cause pain and the body becomes directly expressive or rather affective, emitting sighs and shrieks. Consequently, the body loses its orderly, 'sensible', organic structure and becomes entirely affective. (LS, 106–08) In Deleuze and Guattari's subsequent work, the concept of body without organs is integrated more clearly into their intensive conception of a body in general, while the schizophrenic serves as the figure of an extreme mode of experience and existence, in immediate connection with the intensive dimension of sensation (AO, 26).

From *Anti-Oedipus* onwards, the concept of body without organs concerns the body insofar it is not reduced to an organism as a closed system defined by an

internal organisation. More positively, the body without organs involves only the affectivity or dynamism of a body, i.e. the kinds of actions and influences it is capable of emitting and absorbing. However, the body without organs is according to Deleuze and Guattari essentially neutral, asexual, impassive and indifferent. This is because it is a kind of counterpart or surface of the workings of desire, not part of the desiring processes themselves. Thus, even if the body without organs is immediately associated with desire and affectivity and even revealed by them, it should not be identified with them.

The organism is essentially a whole defined by its parts and internal structure. Admittedly, the organless body also constitutes a whole. However, first of all this whole is a heterogeneous one. Secondly, it is primarily defined by its topological relation to an *outside*: it is the surface on which its exerted actions and suffered passions – its affections – take place. The body without organs thus involves an experiential approach to the body; it evokes the body's sensations as they are immediately experienced.

In *A Thousand Plateaus*, Deleuze and Guattari complete their account of the body by means of another perspective: the cartography of the body. They present a quasi-medieval, Spinozan theory of the body, according to which the body is defined by longitudes and latitudes. As we already saw in Section 1.6, Deleuze and Guattari formulate their concept of *haecceity* in a similar fashion. Longitude consists of the kinetic relations between the extensive parts of the body, their relations of speed and slowness, of movement and rest. Latitude, on the other hand, consists of the affective capacities of the body, its capacity for reacting to external influences and producing these influences or affections. (MP, 314) The two dimensions operate separately and autonomously, but correspond to each other: particular affects always correspond to particular kinetic relations between the constitutive parts and vice versa. As we saw, this formulation of Spinoza's theory of affects is already present in *Expressionism in Philosophy*, longitude as kinetic relations and latitude

as a degree of intensity which determines its affectivity or what it is capable of (SPE, 173–74, 189). We also saw that in *Difference and Repetition*, longitude and latitude correspond to the virtual differential relations and individuating intensities (cf. DR, 315, 325; MP, 310, 314). As I pointed out in Section 1.6, a haecceity is essentially a mode of individuation, and at the beginning of this chapter I distinguished haecceities from bodies and assemblages, based on the extended dimension of the latter entities. However, strictly speaking, Deleuze and Guattari do also define bodies and assemblages of bodies as haecceities, insofar as the processual individuating modes of bodies and assemblages are haecceities (MP, 318, 321).

2.3.1 Organisms and organic thought

The body without organs indicates a mode of being and of organisation different from that of the organism. It is important to look more closely at the concept of organism, as it is a classical systemic model which Deleuze problematises in all of his works, as well as the related concept of the 'organic'. According to one of the key arguments of this work, intensity is for Deleuze the essential character of heterogeneous systems, and accordingly, it is useful to see the principal aspects by which intensive and organismic systems differ.

Thus, the organism has mainly an antagonistic role in Deleuze's works, but it is important to discuss it in detail, as first of all the central Deleuzean concepts of body and machine are distinguished from it and become meaningful in relation to this counterpart. The discussion of the nature of organisms also illuminates the concepts of affectivity and intensity, which precisely distinguish the concepts of body and machine from the organism. It is important to discuss the notion of organism in detail, as this will on the one hand allow us to delineate Deleuze's alternative concepts – machinic assemblage, body without organs etc. – more precisely and make their theoretical contribution clearer. On the other hand, this will also allow me to situate Deleuzean anti-humanism and machinism in relation to such appar-

ently organic thinkers as Mumford, who at the surface level seems directly opposed to Deleuze but in fact shares many of his central insights. It is also important to distinguish Deleuze's thought from such more optimistic heralds of the technological age as Marshall McLuhan and to some extent Gilbert Simondon, although they too converge on certain points.

The organism is a recurring polemical figure in Deleuze's work. He criticises the notion of organism essentially for portraying systems as *closed*. Indeed, when an animal or e.g. a society is conceived as an organism, it is defined in terms of its internal organisation, the parts of which are subordinated to the whole. Consequently, although doubtless referring to a real structure in living beings, the idea of organism downplays the being's relation to its surroundings and to other beings.

I argue that most important single target of Deleuze's critique of organic thought is Hegel's dialectical system, which is inspired by the organic model, as described here by Beiser:

> The absolute develops in the same manner as all living things: it begins from inchoate unity; it differentiates itself into separate functions; and it returns into itself by re-integrating these functions into a single whole (Beiser, 2005, 80).

One could argue that the Hegelian cosmic organism is not closed, as it develops by differentiating itself and is therefore open to change and development. However, according to Deleuze, in this organic framework a unified overall view of the system is always presupposed, even when the realisation of the system is distributed over time. By contrast, in all his work from *Difference and Repetition* onwards, Deleuze seeks to articulate a concept of system which is essentially open to contingent, external connections and transformations. I argue that the most important concepts that express this thought are the concepts of machine and machinic assemblage, which we will discuss in Sections 2.8 and 2.9. The difference between Deleuzo-Guattarian

machinism and Hegelian organicism can be understood through a societal interpretation of these concepts. According to the organic perspective, societies are unified wholes, which may develop and change, but the life of the society is threatened by disintegration and radical changes, like that of the organism. According to the machinic perspective, societies also constitute distinct wholes, but, in contrast to organic wholes, the machinic whole or assemblage is not defined by its overall perspective and unity but by the interactive mode of being, potentials and functioning of its elements. Furthermore, Deleuze and Guattari describe these machinic changes as escaping or fleeing the mode of being of the assemblage; accordingly, they argue that machinic changes are not teleological even retrospectively, as these lead to another assemblage.

Smith and Protevi define the organism as 'the unification and totalization of the connective synthesis of production' (Smith and Protevi, 2018). As we will see in chapter 3, Deleuze and Guattari approach biological processes as networks of connective, passive syntheses. However, these connective syntheses do not in themselves pertain to any higher unity, as they are strictly local. Indeed, this higher unity or unification is the function of the organism.

I argue that the concept of organism is more complex than Deleuze lets on, as several thinkers have developed theories inspired by the organic mode of organisation which are important influences for Deleuze's philosophy. The most important organic influence for Deleuze is Bergson's philosophy, as we saw in Section 1.4.4: for Bergson, the evolutionary bifurcation of life into its different modes is the essential manifestation of the process of duration. Furthermore, Bergson himself explicitly contrasts the vital processes of life to dead matter. However, Deleuze argues that Bergson's system is nevertheless open in the sense that it is neither teleological nor mechanistic: Bergson argues that evolution is truly creative. Secondly, on the basis of Bergson's philosophy, Deleuze and Guattari develop the concept of *inorganic life*, which they present as a necessary consequence of Bergson's philosophy. On the

other hand, Whitehead's cosmic 'philosophy of the organism' comes very close to Deleuze and Guattari's formulations concerning machinic assemblages. Moreover, in contrast to Bergson, Whitehead's concept of 'organic plan' also explicitly includes inorganic nature.

> The concrete enduring entities are organisms, so that the plan of the *whole* influences the very characters of the various subordinate organisms which enter into it. In the case of an animal, the mental states enter into the plan of the total organism and thus modify the plans of the successive subordinate organisms until the ultimate smallest organisms, such as electrons, are reached. Thus an electron within a living body is different from an electron outside it, by reason of the plan of the body. (Whitehead, 1967 [1925], 80)

Indeed, I would argue that here, Whitehead's *plan of an organism* in many respects resembles the Deleuzo-Guattarian *machinic assemblage*. An assemblage is a relational network of heterogeneous elements with a specific, enduring mode of being, where its elements acquire a different nature from the one they have in other assemblages. But here, one could make the case that Whitehead is not really applying the organismic model to all other spheres of existence, but instead a connective, machinic, model to all beings, including organisms.

In his organic approach to technics and human culture, Lewis Mumford, from his strictly anthropological point of view, also stresses the open and creative nature of organisms. At the terminological level, he is thus almost directly opposed to Deleuze and Guattari's formulations. Namely, Deleuze and Guattari analyse systemic transformations and creativity in terms of machinicity and label closed systems 'organic', while Mumford tends to contrast somewhat romantically this organic creativity with technics and machines, which for him in many respects constitute forces that are destructive for organic nature. However, what is interesting here in terms of Deleuze and Guattari's thinking is that Mumford precisely develops

his idea of organism towards Deleuzo-Guattarian machinicity, thus modifying the classical organic framework criticised by Deleuze and Guattari. Mumford describes many characteristic features of human existence as technical creations, for instance the invention of speech and language. However, according to Mumford, technology and machines also have the power of endangering the organic, creative processes of human life (cf. Mumford, 1967, 36, 46). He illustrates his claim by evoking the deplorable conditions of miners throughout the ages and e.g. of factory workers in the nineteenth century. However, he argues that the constraining aspects of machines were already present at very primitive stages of technology, e.g. in the rigid despotism and forced labour of ancient Egyptian society, where individuals resembled the parts of an enormous social machine. In fact, Deleuze and Guattari adopt the corresponding Mumfordian concept of the 'Megamachine', but they associate its suppressive power with the strong role of the state, and not with machinicity itself (AO, 230).

As a third example, Gilbert Simondon, a seemingly zealous proponent of technological progress, adopts the ideal for the design of technical creations from organisms. Thus, he also conceives the organism as a transformable system, although differently from Whitehead and Mumford. Simondon calls the level of sophistication and evolution of a technical object its 'concreteness', while he calls more primitive machines 'abstract', because their functioning is based more on the application of intellectual ideas and less on the coherent joint working of the parts of the machine. The more concrete and evolved the technical object is, the more its mode of being resembles that of natural objects:

> [The concrete, evolved technical object] tends towards internal coherence, towards the closure of the system of causes and effects which exert themselves within its boundaries in a circulating manner. In addition, this technical object incorporates in itself a part of the natural world, which intervenes as a condition of its functioning and thus belongs to

> the system of causes and effects. (Simondon, 2012, 56; cf. Simondon, 2005, 49)

In brief, the evolution of technical objects, according to Simondon, tends towards autonomy in the sense that simple tools that require a constant human effort for their functioning are gradually replaced by machines that perform ever more varied functions for themselves. However, for Simondon, autonomy or 'concreteness' does not necessarily mean automatism, which can be of a very simple and mechanic nature. Instead, the autonomy of a technical object augments as its ability to respond to different circumstances improves.

The organism is for Deleuze essentially an *image of thought*. The critique of such images of thought is a constant theme in Deleuze's works. The object of this critique is from the outset double. First, it concerns the existing images of thought as to how the nature of thought is conceived. However, more importantly, it concerns the habit of forming *any* image or representation of thought in general. Furthermore, it is not simply a question of understanding the nature of thought correctly, as once a certain image of thought is adopted, it also determines the nature of the objects of thought, in a space or plane of thought. Of the existing images of thought, the *organism* is perhaps slightly surprisingly the most prominent one. Briefly, the organism is a closed system, not essentially affected by its outside. Furthermore, this system is hierarchically structured under a transcendent unity.

In *Difference and Repetition*, the figure of the organism features mainly as 'organic representation', referring primarily to an Aristotelian image of thought (Widder, 2012, 28–29; Voss, 2013, 40–41). Deleuze summarises the characteristics of this view of thought as: 1) *identity* in the concept, 2) *opposition* of the different specifications of the concept; 3) *analogy* between the genera and 4) *resemblance* of the concept with the object. Daniela Voss further characterises Deleuze's notion of organic representation thus:

> By 'organic representation' Deleuze refers to a world of representation, in which Being is distributed and divided up according to fixed and proportional determinations. Deleuze compares this world to a 'sedentary space' (DR 36/54) with limited territories and defined properties. (Voss, 2013, 41)

Montebello also traces the roots of organic thought to Greece and Aristotle.

> [...] Greece does not discover difference, but it invents rather an abstract or reflexive Difference instead. This Greek moment, or the moment of 'organic representation' is of capital importance in the constitution of Deleuzean thought, as Deleuze's objective is to take a stand against it. Deleuze sees in Aristotelianism, and in Greece more generally, the establishment of a thought which does not suffer the impact of difference, which curbs the Dionysian flow, and which subjects the cosmos to human representation. In Greece, the thought of difference never abandons the great quadrilateral of representation, imprisoned between the logos of the Species 'logos of that which is thought and said', and the logos of Genera 'the logos of that which thinks and says through us', between what is thought and the thinkable, the object and the subject. (Montebello, 2008*a*, 68; cf. DR, 49 Transl. JT)

According to the organic perspective, the organic whole encloses the opposites in itself. All movement within the whole results from opposites, but the unity is eventually always restored (Montebello, 2008*b*, 35–36; C1, 48).

Another defining feature of organic representation is its distinction between a subject and an object. Deleuze defines an organic description as one that presupposes the independent status of the object it describes (Deleuze, 1984). Organic representation limits thought to a world seen and organised from the human perspective. In many contexts it is thus synonymous with humanistic or anthropomorphic, representational thinking. Furthermore, we can easily see that the movement

resulting from opposition and leading to a restored unity is a distinctly Hegelian notion, which is also a target of Deleuze's critique here. However, in *Difference and Repetition*, Deleuze describes the Hegelian model more specifically as 'orgiastic' (*orgique*), in reference to the infinite framework of the process of reconciliation of conceptual differences and oppositions (DR, 61–66). According to Deleuze, the context and purpose of this Hegelian method is the general grounding of thought (DR, 64). In this context, Deleuze reserves the term 'organic' for the Aristotelian, finite treatment of conceptual differences in reference to the *forms* of things. In this case, according to Deleuze, the interest of the Aristotelian method is to serve as a basis for individual judgements (DR, 46, 63).

It is in his two books on cinema that Deleuze elaborates the notions of the organic and inorganic, largely based on Worringer's notion of the organic. Aristotle and Hegel are clearly the most important figures of organic thought, but Worringer seems to be the only explicit source to make extensive use of the notion 'organic representation'.

> Worringer is the first theoretician to have created the term 'expressionism', and defined it as the opposition of the vital impetus [*élan vital*] to organic representation, invoking the 'gothic or septentrional' decorative line: a broken line which forms no contour in which form and content [*fond*] would be distinguished, but passes in a zigzag between things, sometimes drawing them to a groundlessness [*sans-fond*] where it loses itself, sometimes whirling them in a formlessness where it veers in a 'disorderly convulsion'. (C1, 76/51, transl. modified)

2.3.2 Arborescent and stratified organisation

For Deleuze, the essential character of organic thought is its transcendental unity, which subordinates to itself a definite, hierarchical structure. In *A Thousand Plateaus*, this ideal structure is referred to as *arborescence*, a tree-structure. In the arbores-

cent model of thought, trees are represented by an abstract, hierarchical structure and in another step, organisms in general are modelled according to this abstract, arborescent model.

What is more, Deleuze and Guattari see the distinction between a subject and an object as an essential feature of the tree-model. That is, a tree-structure is always something supposedly external to what it represents. Or to put it in another way, the tree structure always represents something. That is, it is not taken to construct reality or participate in it but it presupposes precisely the possibility of gaining a distance from reality, from the world.

Arborescent and organic thought is thus essentially representational, implying a representation separated from the reality it describes. Nevertheless, I argue that the organism is not for Deleuze and Guattari an ideological invention and it does refer to something real. According to Deleuze and Guattari, the organism constitutes the *stratified* side of the body, 'a stratum on the body without organs' (MP, 197).

> [The body without organs] swings between two poles, the surfaces of stratification, on which it recoils and submits itself to judgment, and the plane of consistency, in which it unfurls and opens to experimentation (MP, 197/159, transl. modified).

As we will see in more detail in Section 2.7, the strata are *stabilised spheres of nature*. As Deleuze and Guattari put it, the strata are elements in the 'judgment of God', by which they refer to a general system of judgment. I argue that by judgment of God they mean two main things: (1) the established, stabilised spheres of reality are the product of specific processes of stratification, and reality is not reduced to these processes; (2) human representation is part of these stratifying, stabilising processes and it naturally focuses on the stratifying aspects of nature, thus strengthening them at the level of thought. More simply put, the strata are the objects of established domains of knowledge. Accordingly, the strata possess a certain autonomy, but they are all affected by the alloplastic, anthropomorphic stratum, which appears through

the two principal dimensions of language and technicity. Deleuze and Guattari refer to these two dimensions as 'expression' and 'content'. According to Deleuze and Guattari, all other strata are affected by the anthropomorphic strata because it is in these humanlike strata that consciousness emerges and represents all the other strata (form of expression) and technically manipulates the elements of all strata ('alloplasticity', form of content). Language and technics do not exhaust the complexity of anthropomorphic strata, but Deleuze and Guattari present them as the general framework of these strata. The principal formal characteristic of anthropomorphic strata is the 'superlinearity' of its expressions, or the complete mutual autonomy of content and expression.

The organ as part of the organism has a determinate function, whereas in the concrete body, the organ *is there*, but its function is indeterminate (FB, 47). Here again one must remember Deleuze's doctrines of differential determination and intensive individuation: the constituents of phenomena are determined only in their mutual relations, which correspond to an individuating degree of power. In the Deleuzean framework, a real organ of the body – the heart, the hand, a single cell – has two concrete ways of being a part of the body: extensive and intensive. As *extensive*, all the bodily parts are undetermined in themselves and have a determinate role only in their mutual relations. However, this should not be confused with the notion of the collaboration of the organs in an organism, as the undetermined bodily parts are in themselves – outside their mutual relations – precisely *undetermined*. Furthermore, the relevant relations cannot be limited to those among the organs but must include the flows of substances passing through the organism and ultimately, all the machinic relations between the individuals composing the whole of nature (MP, 311). Indeed, as we have seen, in *A Thousand Plateaus*, Deleuze and Guattari define these differential relations in a Spinozan vein as relations of *speed and slowness* or movement and rest. From the extensive point of view, the nature of

the bodily parts or organs is thus determined by the kinetic relations of speed and slowness between their differential constituents. (MP, 310–13, 210)

From the intensive and affective perspective, a bodily part is not properly speaking a part, but it may be associated with a particular *ability* or what it does and is capable of. Here again, one should avoid the assimilation of the intensive part or ability with organic functions. In *Anti-Oedipus*, intensive parts of the body are assimilated to the psychoanalytic concept of 'partial object'. In Melanie Klein's analyses, partial objects are elements in the infant's experience which are affectively particularly significant, e.g. the mother's breast. Due to the limitations of the infant's perceptual abilities, she initially fails to connect the breast to the rest of her mother. According to Deleuze and Guattari, organs as partial objects have their special role because they are part of the total power or potency (*puissance*) of the body:

> The body without organs is the matter that always fills space to given degrees of intensity, and the partial objects are these degrees, these intensive parts that produce the real in space (AO, 359/326–27).

In fact, in *A Thousand Plateaus*, Deleuze and Guattari problematise the concept of partial object as 'Frankensteinian', as it involves the idea of patching the body together from its theoretically mutilated parts (MP, 210). Instead, they argue that what is essential in a body are its *intensive movements*, which determine the nature of its organs. According to them, this intensive perspective on the body is thus lost first in the holistic, macroscopic point of view of the organism, which considers the parts of the body in terms of their function in the whole. Second, the local perspective of partial objects fails to appreciate the systemic effects of the intensive movements within the body, as the organs as partial objects are cut off from these movements.

According to Deleuze, the bodily abilities or powers should be conceived as the abilities of the body as a whole. That is, all abilities are always associated with a

particular body as a whole, although a particular part of the body may be more useful than another in a particular action (e.g. the hand in writing). Indeed, it would seem intuitive that the whole body and its parts are constantly active in a seemingly redundant sense, as the body is continuously alive and in contact with its environment. However, what is not redundant is that the body's different activities and abilities constitute different variations or dimensions (intensive parts) of the total capacity or power of the body. Furthermore, from the extensive perspective, these different activities and abilities also imply different kinetic configurations between the extensive bodily parts, to which they however are not reduced. As we have seen, in *A Thousand Plateaus*, Deleuze and Guattari call these individuating intensive parts 'haecceities'. Haecceities refer to such distinct capacities or degrees of power which can be combined in various ways within a single body but also with the haecceities of other bodies (MP, 321).

Despite being part of the total power of the body, the organs thus do possess a certain individuality in the intensive sense:

> Organs are no longer anything more than intensities that are produced, flows, thresholds, and gradients. 'A' stomach, 'an' eye, 'a' mouth: the indefinite article [...] expresses the pure determination of intensity, intensive difference (MP, 203/164).

Thus, organs in themselves are not merely extensive parts, but constitute intensive differences. As I have argued, it is the extensive or stratic organisation of the organism that hierarchically subjects the organs as its extensive parts, with their assigned functions. By contrast, as I have already argued, it is the general nature of intensive quantities, that they are heterogeneous wholes or multiplicities made of heterogeneous wholes. But as we have seen, these heterogeneous multiplicities are always also cases of individuation. For Deleuze and Guattari, the indefinite article ('a'/'an', Fr. *un/une*) expresses an individual or singular mode or manner of being, a dynamic way of occupying time and space. This mode of being is indefinite only from

the point of view of a classification into genera and species, but perfectly determined as an intensive difference. However, in contrast to the idea of partial object, these singular organs are immediately connected in a heterogeneous, machinic assemblage in which they function as a body (MP, 203).

2.3.3 The intensive egg

Deleuze and Guattari present the *egg* as the paradigmatic body without organs (BwO):

> [...] We treat the [body without organs] as a full egg before the extension of the organism and the organisation of organs, before the formation of strata, as the intense egg that is defined by axes and vectors, gradients and thresholds, dynamic tendencies involving energy transformations, kinematic movements involving the displacement of groups, migrations, and all this independently of *accessory forms*, because organs appear and function here only as pure intensities. (MP, 190/153, transl. modified)

We can recall from Sections 1.4.3 and 1.4.5 that this description of the body without organs takes up the description of individuation and its intensive, relational space or *spatium* in *Difference and Repetition*. Thus, approaching the body as organless entails the development and construction of a space of becoming, not restricted to the body itself as an extended thing or as an organism. Similarly, the dynamism of the egg or zygote in the usual sense also always involves an immediate contact with its environment, never happening completely *in vitro*. Furthermore, this space of becoming is not cancelled with the emergence of the (extensive) organism, but subsists within it as an intensive dimension of the body:

> The BwO is the egg. But the egg is not regressive: on the contrary, it is perfectly contemporary, we always carry it with us as our own milieu of experimentation, our associated milieu. The egg is the milieu of pure

> intensity, spatium and not extensio, Zero intensity as principle of production. [...] The BwO is not 'before' the organism; it is adjacent to it and is continually in the process of constructing itself. (MP, 202/ 164, transl. modified)

The Deleuzean body thus continues to be an egg despite the emergence of mature organs. However, this is because the egg as a site of becoming is essentially intensive and atemporal in the first place. This means that the dynamisms and experimentality of the egg are carried on into other forms in the postnatal body. The clearest difference is that postnatal experimentation takes place in a vast environment, while the milieu of the egg is spatially limited. Conversely, the egg undergoes much more intense internal creative processes than the organism with its coded and territorialised functions.

2.4 Assemblages and bodies as modes of individuation

Bodies exist and act in collectives. Deleuze and Guattari call such collectives of bodies 'assemblages'. Moreover, for Deleuze and Guattari, the nature of bodies is determined by the assemblage to which they belong. For instance, according to them, tools and weapons do not differ *intrinsically*, on the basis of their primary physical properties. Nevertheless, they differ by their *internal* characteristics relative to particular assemblages (MP, 495–96). A tool knife and a weapon knife are used very differently, and in the long run this difference is usually also mirrored in the intrinsic physical shape and material constitution of the knives. However, it is important to notice that it is the mode of existence the thing has in a specific assemblage which determines its nature and mode of being. Similarly, for instance a race horse and a work horse involve very different assemblages and have different modes of being, although they can be relatively similar anatomically and regarded

as members of the same biological species. According to Deleuze and Guattari, the assemblage determines the very mode of being of its constituent elements, and this mode of being is expressed as affects.

Even if assemblages are composed of bodies and of their actions and expressions, Deleuze and Guattari do not postulate any fundamental difference between bodies and assemblages. Rather, they conceive bodies as individualities or individuations that can compose larger individualities or be composed of smaller individualities. Indeed, I have argued that the notion of *haecceity* expresses the affective and dynamic side of individuation, while the body is more closely connected to the material, extended side of individuation (cf. MP, 320–21). This is mainly a question of emphasis, as Deleuze and Guattari also define the body by a longitude and a latitude and haecceity is the 'mode of individuation' composed of these two dimensions (MP, 318). Nevertheless, Deleuze and Guattari specify that this individuating aspect of the body refers to the plane of consistency, its affective-kinetic mode of being as a haecceity, instead of the stratic mode of being as a substantial being in the strata. Longitude thus concerns the extensive parts of a being, but essentially in their kinetic relations. Thus, it differs from the static, representative considerations of species and genre, which however also concern the extensive aspects – parts and qualities – of a being (MP, 314). Still, haecceities constitute precisely the machinic-bodily *content* of the plane of consistency, while it has a distinct plane of *expression*, which consists of 'proper names, infinitives of verbs and articles or indefinite pronouns', corresponding to or accompanying the haecceities (MP, 322).

As Deleuze and Guattari note, a haecceity is essentially different from a 'person, subject, a thing or a substance', as it is defined precisely by its affects and its mode of being and of interaction with its environment (MP, 318). Thus, Deleuze and Guattari's discourse of haecceities in *A Thousand Plateaus* continues the theme of individuation we encountered in *Difference and Repetition* and *The Logic of Sense*. However, here individuation is defined by affectivity, while the earlier works fo-

cused on the process of individuation, following Simondon's lead. In *Difference and Repetition*, the focus was on how in a dynamic process, intensive individuation is covered over by the extensive features of an individual. By contrast, in *A Thousand Plateaus*, a haecceity defines a mode of individuation or individuality only by its internal kinetic relations (longitude) and its affects (latitude) (cf. MP, 318). I argue that the individuation of haecceities is congruent with the examples of individuation presented in *Difference and Repetition*, but now intensive individuation appears more like a constant and ubiquitous dimension of reality, which can be found anywhere: in winds, storms, dates, seasons etc. Haecceities are defined by the same characteristics of longitude and latitude as bodies and assemblages, but they further underline the immediate and momentary nature of the kinetico-affective mode of individuation.

2.5 Matter as phylum

Phylum is Deleuze and Guattari's term for *matter in flux or in variation* (MP, 508–09). Thus, it is a key concept for both our considerations of intensity as the intrinsic mode of being of materiality, but as we will see, especially for our discussion of technics as creative, material knowledge. At first, Deleuze and Guattari characterise the phylum simply as 'matter' (cf. MP, 176–77), but later they also speak of it more specifically as 'movement-matter', evoking Bergson's dynamic conception of matter in *Matter and Memory* (Bergson, 2009 [1896], 83, 145; B, 73). Moreover, I argue that the concept of phylum is Deleuze and Guattari's inorganic development of Bergson's famous concept of 'vital impetus' (*élan vital*) as it appears in *Creative Evolution*. In a sense, the machinic phylum continues organic evolution in the form of technology – Michel Serres calls this technical evolution 'exo-Darwinism' (Serres, 2001, 50). However, in a more profound way, for Deleuze and Guattari, evolution has *always* been led by an inorganic, machinic phylum. Indeed, this would seem to be the only

consistent way of acknowledging technology as part of the evolutionary process and not simply something external to it. But in this case, I argue that life itself must include the inorganic, or better yet, *be* inorganic. Thus, the machinic phylum can be regarded as a historic vital impetus encompassing all material existence. For these reasons, Deleuze and Guattari choose the term 'phylum', meaning 'lineage'. 'Phylum' is also at the root of the notion of *phylogenesis* – the genesis of different biological taxons, i.e. species, genera, and most importantly, the bifurcations of these taxons. However, due to the inorganic nature of the machinic phylum, it is in fact best visible in what can be called 'technical phylogenesis', since technical development is not captured in stratified forms but follows material variations more freely, producing intersections and communications between different strata. Such creativity also always entails the creation of new assemblages, e.g. in the adoption of new materials and practices. Understood as a 'technological lineage', the phylum accounts for the evolution and development of technology, but it is not reduced to the material history of technology.[7]

Deleuze and Guattari define the machinic phylum as a material continuum of intensity, bearing singularities or haecceities (traits of content) and expressive traits, affective qualities or affects (intensities).

> We can speak of a *machinic phylum* or of a technological lineage whenever we are dealing with a set of singularities that can be prolonged by operations that converge and make the singularities converge on one or several assignable traits of expression. (MP, 506)

That is, a phylum appears as the material continuity of a line of development in technology, for instance from the knife to the sabre, which share the same 'singulari-

[7] However, we must bear in mind that technology can also be considered as the content of the anthropomorphic strata, acquiring its relatively fixed forms, substances and practices. We will discuss this tension in detail in Part II, but for now it is important to remember that according to Deleuze and Guattari, human existence is at once capable of the most liberating deterritorialisations but also of the most constrained reterritorialisations. Consequently, cases of technical creativity and invention are important examples of the more general notion of machinicity as a creative force, but at the same time no existing technology is intrinsically emancipatory or liberating.

ties' (the melting point of iron, its decarburisation point). Furthermore, the process of fabrication produces the expressive trait or affects of hardness, sharpness and polishedness, but also the undulating figures on the sabre. Material singularities can also be 'variable undulations and torsions of wood fibres'. In this case, affects correspond for instance to 'more or less porous wood, more or less elastic or resistant' (MP, 508). In brief, singularities and affects express the dynamic structure and behaviour of the material and the operations by which it is discovered and developed. Deleuze and Guattari present the art of metallurgy as the privileged exploration of this material variation and of the machinic phylum.[8]

Could the affective, expressive traits not be called simply *qualities*? Indeed, Deleuze and Guattari also call these affects 'affective qualities', but they insist on the affective nature of these traits, as they precisely result from the operations or make them possible in the first place (MP, 505). Thus, though affects always appear as qualities, they are immediately connected to actions or operations and thus cannot be reduced to mere qualities. Indeed, as we saw earlier, it is the characteristic feature of intensity to be covered up by a quality.

The phylum consists essentially of the intensive aspects of matter, or of 'singularities and haecceities' on the one hand and 'intensive, variable affects' on the other (MP, 508). Deleuze and Guattari distinguish the phylum from Aristotelian formed matter or *substances* as well as from essential properties qualifying the substances. However, the phylum is neither pure nor homogeneous, passive matter or *hyle* as such, as it comprises both singularities and affects, manifesting its internal, heterogeneous dynamics. We can recall here Simondon's critique of Aristotle's hylomorphism that we discussed in Section 1.5. In the Aristotelian tradition, matter is reduced to a passive, homogeneous recipient, which is moulded by an extraneous form – the active principle. As with Simondon, Deleuze and Guattari also call for a more dynamic notion of matter, acknowledging its intrinsic characteristics:

[8] Deleuze and Guattari also analyse music in terms of a machinic phylum, owing to the primacy of variation in all music. We will elaborate on this idea in Chapter 3.

its heterogeneous dynamic structure and its reactivity in relation to moulding and modulation. As Simondon argues, the hylomorphic schema works best in a case like moulding a brick out of clay: the material is relatively homogeneous, and the mould forms the clay simply by limiting it. But as we saw, even in the case of the brick this moulding by limiting is only a part of the whole picture, and even more so with metallurgy, where the shape is the result of continuous operations. The main point here is to understand the intrinsic and dynamic nature of the characteristics of the material; the characteristic properties of a material are not to be conceived as extrinsic or static properties included in a representation, but as concrete expressions of a material mode of being.

Matter as phylum has a varying, dynamic structure which is manifested as its singularities and also as a particular way of behaving and reacting to operations – its affects. Now, the affects of a phylum are its properly intensive features, encountered as degrees or gradual variation, e.g. of resistance or elasticity. However, I would argue that the phylum in general is known or encountered as *intensive*. This is not to say that singularities could be reduced to intensities, but I merely claim that there is an intensity attached or corresponding to each singularity, through which we come to experience and know it. I shall demonstrate this in detail later in the part on technology.

In a word, phylum means *matter from an intensive perspective*. It is the material mode of being, 'the unformed matter' of an *abstract machine*, guiding for instance the development of technology but according to Deleuze and Guattari also of music. The phylum is always paired with a *diagram*, which provides the functional side or the 'non-formal functions' of the abstract machine (MP, 177, 637). The diagram constitutes the expressive side of the abstract machine, appearing as *signs* and relations of signs. However, Deleuze and Guattari claim that signs must be studied in their mode of being rather than as signifying. More precisely, this mode of being is according to them territorial (MP, 177). In addition to this phylum–diagram

duality of the abstract machine, as we have seen, the phylum itself is also dual, consisting of singularities as well as of expressive traits or affects. Similarly, the diagram also possesses its 'expressive side' and its 'content side' (the continuum of sounds in the case of language). This duality is due to the ubiquitous nature of the double articulation of *content and expression*, which I shall analyse in detail in Section 2.7.

What makes matters more complicated is that in the phylum and in the diagram the double articulation of content and expression is completely relativised, and content and expression only exist as 'traits'. As a first approximation, we can say that this continues Deleuze's engagement with differential calculus in *Difference and Repetition*, giving it a more specific interpretation: the diagram is like a differential equation in relation to the function of stratification. A diagram expresses the potentiality of a process of stratification. It is as if Deleuze and Guattari were following Bergson's idea in *Creative Evolution* of trying to discover the differentials of vital processes, from which the processes could be integrated. That is, they propose a particular function of double articulation (content–expression) for each stratum, and the diagram of each stratum is like the differential potential that is integrated into the stratum but is not reduced to it. In the same vein, a phylum constitutes the corresponding material intensities, the immediately appearing affects of the diagram, but also the singularities determined by its differential relations.

2.6 Plane of consistency

Deleuze and Guattari also characterise the plane of consistency as 'intensive matter', or as unformed and unorganised material processes (MP, 58). This aspect of the plane of consistency comes very close to their notion of *phylum*, which I argue is the more relevant notion for intensive materiality, as we will see more concretely in Part II. In fact, I would argue that a phylum is precisely a development of this intensive,

unformed materiality of the plane of consistency, under the influence of an *abstract machine* (see Section 2.5).

More importantly however, the plane of consistency has the role of a *surface of inscription for intensive individuations* (MP, 632). I have argued that the plane of consistency is a virtual reference point, which corresponds to the intensive mode of being and activity. In this sense, it is a generalised body without organs, which Deleuze and Guattari define precisely as the surface of inscription of desire. In the description of the plane of consistency below, we can note the similarities with the earlier description of multiplicities:

> On the plane of consistency are inscribed: *haecceities*, events, incorporeal transformations apprehended for themselves; *nomad or vague essences*, which however are rigorous; the *continuums of intensity* or continuous variations, which surpass constants and variables; *becomings*, which have no terminus nor subject but drag both of these into neighbouring zones or zones of undecidability; *smooth spaces*, which are composed through striated space. In each of these cases a body or bodies without organs (plateaus) are involved: in individuation by haecceity, in the production of intensities from a zero degree, in the matter in variation, the medium of becoming or transformation, the smoothing of space. A powerful, non-organic life which escapes the strata, traverses the assemblages and traces an abstract line without contour, a line of nomad art and of itinerant metallurgy. (MP, 633)

The plane of consistency may thus appear as a catch-all notion for all the subversive themes Deleuze and Guattari endorse. And indeed, taken abstractly, that is exactly what it is: the plane of consistency seems to be the objective or terminus of the lines of flight, deterritorialisation; it also seems to be the essence of the body without organs, of the phylum and of smooth space. Indeed, Deleuze and Guattari assimilate

the plane of consistency to Spinozan substance, and bodies without organs to different types of attributes (MP, 190–91, 195). I argue that this Deleuzo-Guattarian reading of Spinoza involves two main changes of focus with regard to Spinoza. (1) Deleuze and Guattari take the perspective of *becoming* as more fundamental than that of *being*. Consequently, the plane of consistency does not constitute the totality of reality which would include all beings as its extensive parts, but it constitutes solely their space of becoming. From the Spinozan perspective, this entails emphasising the importance of his dynamic definition of modal essences and accordingly, the affective side of individuals. (2) Deleuze and Guattari emphasise the finite, 'existential' and individual point of view rather than the point of view of the all-encompassing substance. Thus, the individual is no longer defined as a part of the whole, but the general dimension of becoming – the plane of consistency – has its role essentially in the individual perspective.

What new purpose does the concept of plane of consistency serve in addition to the concepts it encompasses? And could the plane of consistency not replace all its subconcepts? Like the body without organs, the plane of consistency is essentially a virtual *correlate of actions*. It is like the virtual context for all the bodies without organs, all the haecceities, all the deterritorialisations and all the phyla. Furthermore, the second, related role of the plane of consistency is *the mode of connection* of multiplicities or of heterogeneous series, maximising the number of connections (MP, 632–34).

> The plane operates the section of multiplicities with variable dimensions. The question then concerns the mode of connection between the different parts of the plane: to what extent do the bodies without organs interconnect [*se composent-ils ensemble*]? How are the continuums of intensity extended? In which order are the series of transformations formed? What are these alogical chains that are always established in the middle and through which the plane is constructed piece by piece

> in ascending or descending fractional order? (MP, 633/507–08, transl. modified)

Thus, the plane of consistency is the correlate of actions and connections. Despite its lack of organisation, it does enable or operate the connection or 'consolidation' of heterogeneous and disparate elements (MP, 632). Indeed, I argue that this heterogeneous connection is the essential sense of the *consistency* of the plane. Deleuze and Guattari thus define consistency as a real connection between heterogeneous elements – or as 'affirmation of difference' – instead of defining it as the absence of logical contradiction. Furthermore, as we saw in 1.4.5, heterogeneity is also one of the key properties of intensive quantities: an intensive quantity is a heterogeneous whole, which can be divided or augmented, but only by changing its nature (cf. MP, 634). I would argue that the plane of consistency is *the intensive counterpart of strata*, which precisely stratify the plane of consistency by articulating it into content and expression, both possessing forms and substances, characterised by *extensity*.

So, the plane of consistency has a specific role, distinguishing it from its apparent subconcepts. But does it thus make these subconcepts redundant? What makes the Deleuzo-Guattarian vocabulary complicated is that each intensive concept is directed against a specific extensive counterpart. However, while the extensive concepts form complicated hierarchies, the intensive concepts form a continuum, or rather a 'rhizome': the notions implicate one another and are interrelated, but not in a fixed order. Thus, the choice of a particular intensive concept depends essentially on which extensive concept dominates the particular field of problems in question. As we saw earlier, according to Deleuze and Guattari, the body is imprisoned by an organism, the assemblage by a territory, individuation by the individual, subject or person, matter by substances and forms, the plane of consistency or the earth by strata etc. From the intensive point of view, there is no hierarchy between these

problems, but they constitute an interconnected family of problems, which all point towards the plane of consistency.

2.7 Strata

Now we should have a basic idea of the intensive notions in *A Thousand Plateaus*: body, affects, haecceity, phylum, plane of consistency. However, in view of our eventual analysis of intensity and technicity, we must acquaint ourselves with the extensive counterparts of these concepts. Namely, not only do we need the intensive notions Deleuze and Guattari put forth more or less affirmatively, but we also need the concepts they use to analyse the restrictive and detrimental dynamisms and structures. It is perhaps the mark of all great philosophical systems that in addition to constructing the positive concepts that crystallise the views they embrace and affirm, they also formulate the negative concepts that express the untenable status quo. Be that as it may, Deleuze and Guattari do not simply criticise existing ways of thinking or simply present their alternative, but they first of all seek to articulate the underlying ontology of the insufficient and untenable dominant modes of thinking and acting. Against this backdrop, they formulate novel concepts for what they see as relevant alternatives and potential for change. Expressed in Deleuze and Guattari's own terms, they want to capture the highest degree of a potential as well as its lowest degree.

Stratum is one such ambiguous concept, which is essentially the name for wide-ranging, quasi-objective aspects or parts of reality, like geological nature, the biological realm, or human culture. The strata refer to established modes of being (e.g. physicochemical, biological, anthropomorphic) with *unity of composition* and a specific mode of expansion, defined by the double articulation of *content and expression*. Content and expression are concepts adopted from the Danish linguist Louis Hjelmslev; Deleuze and Guattari expand these notions beyond the linguistic

context. However, as in Hjelmslev's own work, Deleuze and Guattari's concepts of content and expression also replace the Aristotelian perspective of forms and substances. According to Deleuze and Guattari, content and expression both possess their own substances and forms: substance and form of content and substance and form of expression.

The notion of stratification purports to be objective, referring to objective processes, but at the same time Deleuze and Guattari stress the relative and even political nature of the notion. That is, the members of all strata can be concretely decomposed or *destratified* into their elements, or rather subelements, which manifests the relativity or transience of these stratified entities. The political aspect of stratification applies most clearly to the anthropomorphic stratum, which concerns precisely humanlike action and culture. However, Deleuze and Guattari also refer to politics within the sciences, for instance in nineteenth century biology in the debate between Geoffroy Saint-Hilaire and Cuvier (MP, 60–63). Indeed, they suggest that the tension between stratification and the plane of consistency is reflected in the oppositions involved in scientific polemics concerning the representation of reality.

2.7.1 Double articulation of content and expression, different types of strata

Deleuze and Guattari present a dynamic account of reality in terms of the function of *double articulation*. It would seem that our dominant, static way of thinking and representing reality is still Aristotelian, in terms of matter and form and of the hierarchy of concepts, genera and species. Indeed, all classification is Aristotelian. According to hylomorphism, a thing is identifiable thanks to its form and this form can only exist in some material or medium. In the classifying mindset all things can be placed in a hierarchical order of genera and species.

By contrast, instead of the hylomorphic scheme of form and matter, content and expression are the operations of a function between two sets of matter and form that

are themselves arranged by this function. According to Deleuze and Guattari, the articulation of content selects elements (content-matter) in a certain order (content-form), while the articulation of expression organises these elements into compounds (expression-matter) with a relatively stable structure (expression-form). Thus, according to Deleuze and Guattari, these forms and matters or substances (i.e. formed matters) are perfectly real, but at the same time they are simply the side product of the double articulation of stratification.

> The first articulation [of content] chooses or deducts, from unstable particle flows, molecular or quasi-molecular metastable units (*substances*), to which they would impose a statistical order of connections and successions (*forms*). The second articulation [of expression] establishes the stable, compact and functional structures (*forms*) and constitutes the molar compounds where these structures are simultaneously actualised (*substances*). (MP, 55/40–41)

Thus, instead of taxonomic genera and species, different spheres of reality are organised as *strata*, characterised by a particular kind of double articulation, not by an essence or by a specific difference. Despite the difference of this scheme from hierarchical taxonomy, a stratum may still serve as a substratum to another one, for instance the physical and chemical substances utilised by the organic stratum. However, here the relation is one of concrete constitution or composition, not of conceptual or structural hierarchy – certain elements of one stratum are taken up in the formations of another stratum. Accordingly, I argue that for Deleuze and Guattari, the dynamism of double articulation can be found anywhere where a mass of elements is selected in some order, accompanied by an organising, stabilising operation.

Lapoujade (2014) distils the general features of the double articulation of content and expression in the following manner: the articulation of content is the 'operation by which the interaction of molecular multiplicities leads to the formation of a mass

or substance with an ordered, statistical behaviour' (Lapoujade, 2014, 195–96). On the other hand, 'to express is to actualise the relative invariance of a structure and its independence with regard to the content' (Lapoujade, 2014, 198). To put it briefly, *content* is a statistically ordered mass of elements, while *expression* is a relatively invariant organisation of this mass (MP, 55).

As I mentioned above, Deleuze and Guattari adopt the notions of content and expression from the Danish linguist Louis Hjelmslev. I argue that the important novelty in Hjelmslev's theory is its *functionality*. Namely, he seeks to sidestep the traditional problems concerning the nature of the sign by treating the sign as a function instead of an autonomous entity referring to a reality external to it. Instead of the sign being the *expression* of some *content*, Hjelmslev defines a sign-function contracted between a content and an expression. As with mathematical functions, the 'variables' or 'functives' of content and expression have the role they have only by virtue of being elements of the function. (Hjelmslev, 1969, 47–48)

Furthermore, Hjelmslev distinguishes between the substance and form of each functive. Thus, in the linguistic context, the sign-function associated with the word 'ring' picks out a certain material object (content-substance) by giving it a content-form, arranging under it the relevant type of objects, and distinguishing it from other meanings of 'ring' (a ringing sound, a ring of people etc.). Nevertheless, the uttering of the word, the expression, as a sound sequence also has a vocal substance, ordered under the expression-form, which arranges it together with other possible pronunciations and distinguishes it from mere sounds. (Hjelmslev, 1969, 57–58) Substance and form thus depend on each other and can be separated only in the abstract (Hjelmslev, 1969, 50). On the other hand, content and expression are reciprocally determined functives of the sign-function. Unlike substance and form, they are distinct entities, albeit they lose their functional sign character when considered separately. Accordingly, Hjelmslev argues that we can think without speaking and speak without thinking, but when separated from the sign function,

the thought is no longer a linguistic content and the speech is no longer a linguistic expression. (Hjelmslev, 1969, 49)

For Deleuze and Guattari, the main interest in the Hjelmslevian double articulation lies in its decoded and deterritorialised nature: expressivity is not a priori tied to any signifying system, but can adopt an infinity of forms and substances (AO, 288–89). As Lapoujade points out: 'all phenomena, whatever the stratum to which they belong, are doubly articulated' (Lapoujade, 2014, 197–98). For this reason, Deleuze and Guattari propose a metaphysical reading of Hjelmslev in *A Thousand Plateaus*, where double articulation is conceived as the general function of stratification. Each stratum is defined by its specific kind of double articulation. The three main groups of strata are the physicochemical, the organic and the anthropomorphic. The qualification 'group' must be emphasised, as the double articulation appears in various forms even in closely connected phenomena. For instance, according to Deleuze and Guattari, *manuality* and *language* define distinct strata within the anthropomorphic group of strata. However, the strata of manuality and language have the *nervous, cerebral milieu* as their common external milieu, defining the domain of anthropomorphic strata (MP, 83).

2.7.2 Physico-chemical, geological stratification: amplification

In the physico-chemical and geological groups of strata, the double articulation of content and expression is defined as a distinction between the molecular content and the molar expression. In other words, the double articulation is manifested as *amplification*: the molar expression simply amplifies the molecular structure of the content (MP, 75). We can look again at the example of crystallisation which we already discussed in the context of Simondon's philosophy. The process of crystallisation usually takes place in a hypersaturated, metastable liquid, where a *singularity*, a small external particle is introduced (content). This starts the process of crystalli-

sation, producing a macrostructure (expression) which is determined by the initial information provided by the particle.

The sedimentation and folding of rocks is another example of geological double articulation. Sedimentation constitutes the content by piling up cyclical sediment units, the 'flysch', while *folding* is its expression, constituting a 'stable functional structure of ensuring the passage of sediments to sedimentary rocks' (MP, 55).

Thus, the geological stratification is distributed along the molecular–molar axis, content being molecular and expression molar. However, this is the case only in geological stratification and in other strata double articulation follows different distinctions. DeLanda, for instance, misrepresents double articulation as always involving a difference of scale (cf. DeLanda, 2002, 166; MP, 77, 628). By contrast, it is essential in view of the functional nature of double articulation that it acquires different modes, according to the forms and substances it organises.

2.7.3 Biological, organic stratification: linearity of the genetic code

For Deleuze and Guattari, the stratification of life appears as the *organic strata*. Here, protein synthesis is the definitive double articulation. According to them, the nucleotides and nuclear acids serve as the central expression and the stable structural component in the biological group of strata, while amino acids and proteins have the role of content (MP, 57, 77). One can thus see that the distribution of content and expression changes according to the stratum, showing that it is not defined by either a temporal order or the order of magnitude, as in the distinction molecular–molar. As François Jacob notes, the dynamics of the genetic material (nucleic acids) and of the proteins is circular – the functioning of each requires the other in the manner of chickens and eggs (Jacob, 1970, 326). That is, it is the initiator proteins that trigger the DNA replication process in the first place. This again underlines the functional nature of double articulation: it is a dynamic, operative relation between

two subordinate dynamic operations. In the organic realm, expression does not amplify, but as in all strata, it provides stability and invariance: the genetic code contains all the information for the construction and reconstruction of the entire organism and its proteins. Proteins and amino-acids on the other hand are the variable element, the content, in this synthesis, constituting building blocks, for the different parts of the organism.

Thus, according to Deleuze and Guattari, the organic double articulation is not amplifying but *linear*. The genetic code is linear, proceeding end to end, characterised by 'local regulations and partial interactions' (MP, 81). Furthermore, content and expression are here independent of one another.

> Expression indeed refers to nucleotides and nucleic acids as molecules which in their substance and form are completely independent not only of the molecules of content, but also of all oriented action from the external environment. Invariance thus belongs to certain molecules, no longer to the molar scale. (MP, 77)

In the organic strata, the invariance of expression is a linear *code*, and its unidimensional form is thus detached from the three dimensions of the molar result of the crystal. On the other hand, the content of proteinic amino acids is as such equally independent of the nucleotides, except for the determined correspondence of a particular sequence of three nucleic acids with a particular amino acid. This autonomy entails the organism's capacity to reproduce itself and also a greater potential of *deterritorialisation*. Namely, in physico-chemical expression, the molecular structure is developed as three-dimensional amplification, which defines its type of territoriality. By contrast, the molecular code of the DNA is linearly copied, independently of the form of the organism, allowing the structure of the entire organism to be reproduced. Thus, the molecular structure of the DNA is not confined by the three spatial dimensions of the crystal but instead it can be copied and regenerated a potentially unlimited number of times. (MP, 78)

2.7.4 Anthropomorphic strata – technology and language

> *The man gave names to all livestock and to the birds of the heavens and to every beast of the field.* - Genesis 2:20
>
> *This instrument, therefore, – the hand – of all instruments the most variously serviceable, has been given by nature to man, the animal of all animals the most capable of acquiring the most varied handicrafts.*
>
> - Aristotle, *The Parts of Animals*.[9]

In contrast to the linearity of the genetic code characteristic of the organic strata, Deleuze and Guattari define the double articulation of the anthropomorphic group of strata by the *superlinearity* of its encoding, or indeed by its *overcoding* (MP, 81). Superlinearity refers to the ability of language to represent all other strata: take any thing in the world and you can give it a name, represent it in language.

More specifically, Deleuze and Guattari call superlinearity the 'specific deterritorialisation' of vocal signs and of language in general. In this respect, what is relevant about language is the kind of process or mode of being that distinguishes it from other phenomena and sets it apart or *deterritorialises* it from a previous mode of being. What then has transformed the human voice from mere sounds into language, what has deterritorialised it from animal sounds? Deleuze and Guattari's answer is the power of translating or *representing*, creating a superlinear code to accompany the world. (MP, 81) Accordingly, I propose *animal repraesentationalis*, the representing animal, as the definition of the human species.

However, the representative function of language is only the expressive articulation of the anthropomorphic stratum. The other dimension, content, is constituted by the *manual form of technicity* (MP, 79). Aristotle already noted the versatile nature of the hand, in contrast to animal organs serving only a single, particular function – the tortoise has its shell as a permanent shield, and the tiger its claw, but

[9] (Aristotle, 1983, 687b).

the human hand can grasp and handle a multitude of tools and weapons (Aristotle, 1983, 687b–88a). However, according to Deleuze and Guattari, the hand must here be understood as an *encoding* or *dynamic structuration*, not as an organ. That is, just as language overcodes all things with words, the hand becomes the universal form of modifying and shaping the external world (MP, 79–80).

Furthermore, the hand is not merely an expression of intelligence as the properly human essence, as for Aristotle, but for Deleuze and Guattari the essential feature of the hand is its *alloplasticity*, manipulation of the external world. Similarly for language as expression, linguistic signs are external to their referents and can be arbitrarily modified (MP, 79). Thus, humans are essentially outside of themselves, but they also create a double transcendent and overcoding field of language and technology or the 'Ecumenon' (*Œcumène*), as Deleuze and Guattari call this overcoding plane of anthropomorphic existence. Also, the operational nature of technical content as well as of linguistic expression entails that they are predated by *power formations* of a technical social machine (content) and sign systems (*régimes de signes*) of a collective semiotic machine (expression). (MP, 82) That is to say, the technical and linguistic elements are determined by a particular historical and territorial *assemblage*, involving the stratum and its elements and 'articulating the power formations and sign systems' (MP, 86). Thus, technology and language are not teleological forces driving human history, but they constitute a specific anthropomorphic logic (double articulation or stratification) which is instantiated by concrete, contingent assemblages.

There is no doubt that technicity and language are distinctly human phenomena, but how are they linked to each other and why should they be a case of double articulation? Deleuze and Guattari find their inspiration in Leroi-Gourhan's work *Gesture and Speech* (*Le Geste et la Parole*, 1964), where Leroi-Gourhan assimilates technicity with the activity and development of the hand, and language with the evolution of the human face. Drawing on Leroi-Gourhan's work, Deleuze and Guat-

tari argue that the hand and the face have *the brain* as their common external milieu (MP, 83). That is, the manoeuvring of the hand and the articulation of the face seem to have gone hand in hand in the early development of the human brain. Leroi-Gourhan suggests that the capacity for an *operational syntax* constitutes the basic common cerebral faculty enabling both technicity and language.

> Technics [*La technique*] involves both gestures and tools, organised in a chain by a proper syntax, which gives to the operational chains at once both their steadiness and their flexibility. This operational syntax is suggested by the memory and it comes about [*naît*] between the brain and the material environment. If we pursue the parallel with language, we find the same process always taking place. (Leroi-Gourhan, 1964, 164/114, transl. modified)

Accordingly, this cerebral operational syntax would seem to define the anthropomorphic stratum for Deleuze and Guattari, with technicity and language as its content and expression respectively. More precisely, the brain is part of the organic substratum serving as a dynamic material for the anthropomorphic stratum. However, according to Deleuze and Guattari, there is no hierarchy between the superstratum and substratum based on the degree of organisation, as this organic or prehuman substratum is itself just as organised as the anthropomorphic stratum.

Deleuze and Guattari argue that technicity and language as double articulation of the anthropomorphic strata are brought about in an assemblage developed in relation to the environment of the *steppe* (MP, 83, 80). This is again a manifestation of the fundamental contingency in Deleuze and Guattari's analyses: a fundamental transformation (the emergence of the anthropomorphic stratum) is brought about as a reaction to an external factor or to an *associated milieu* (the steppe), requiring a new assemblage (upright position, development of hands and feet, a prolonged period of breastfeeding, transformation of communication, the harnessing of fire etc.).

Leroi-Gourhan's analysis of the coevolution of gesture and speech provides the basis for the Deleuzo-Guattarian account of the anthropomorphic strata and for the role of technology and technicity in it. However, we will see in Part II in what ways technicity can be creative and break free from its stratified forms. Also, having surveyed the three main types of strata which Deleuze and Guattari discuss (geological, organic and anthropomorphic), we can now flesh out the ontology of stratification in more detail.

2.7.5 Unity of composition, codes and territoriality, forms and substances

According to Deleuze and Guattari, each stratum is defined by a *unity of composition*, which consists of a code and of a territoriality (MP, 54).

> The unity of composition concerns the formal traits common to all forms or codes of a stratum, and the substantial, material elements common to all its substances or milieus (MP, 627).

For Deleuze and Guattari, *code* and *territoriality* are the fundamental operations or processes of which *form* and *substance* are expressions or results, respectively (MP, 70). The code determines the internal characteristics of a being, while territoriality refers to an autonomous, external sphere of activity.

Territoriality entails a partial *decoding* of the being's code. Thus for instance in the evolution of biological organisms, some transformations can only be explained by reference to factors external to genetic mutations, such as geographical separation. The code of a being always has a certain margin of variation (of decoding), which allows for intraspecific differentiation and thus for territorialisation (MP, 396).

Forms and substances are outcomes of the processes of encoding and territorialisation and provide a kind of material for the content and expression of each stratum. Why is Deleuze and Guattari's system of stratification and territorial-

ity so complicated? It involves three pairs of concepts (1) forms–substances, (2) expression–content and (3) encoding–territorialisation. I argue that these distinctions account for (a) the omnipresence of elementary substances in all domains and levels of being (substances and forms), (b) the essential differences between these domains and levels (specific content and expression for each stratum) and (c) the dynamic and static aspects of each domain or stratum (code vs. form, territoriality vs. substance). However, while form and substance imply each other reciprocally, encoding and territoriality are in principle distinct, autonomous processes, whose interplay, together with other factors, creates really indistinct forms and substances.

2.7.6 Milieus and rhythms

Deleuze and Guattari further specify that strata divide into milieus or spheres of existence (Fr. *milieu*). A milieu is a sphere of life or existence related to a particular being, or more generally 'a block of space-time constituted by the periodic repetition of the component' (MP, 384). The milieu is essential to a being and corresponds to its nature. Thus, for instance a spider's web as its milieu is not simply an external product, but intrinsically woven to its mode of being and to its form (MP, 68, 386). More precisely, the web is what Deleuze and Guattari call an *associated or annexed milieu*. It is an organic part of the spider's coded form, even if strictly speaking the web is external to the spider.

Milieus and rhythms provide an undetermined, irregular and creative source which is worked on by codes and territories. That is, codes are 'periodic repetitions', but milieus imply a 'perpetual state of transcoding or transduction' of the code, mutating or reformulating it in a communication among milieus (MP, 384–86). A rhythm in Deleuze and Guattari's sense has no measure, as measure precisely 'supposes an encoded form' in a non-communicating milieu (MP, 385). A territory, on the other hand, is 'made of aspects or portions of milieus', and is defined by the emergence of 'materials of expression' or qualities (MP, 386–87). Territoriality con-

sists essentially in the act of *territorialisation*, which Deleuze and Guattari describe as the 'act of a rhythm which has become expressive, or of milieu components which have become qualitative' (MP, 388/315). That is, substances present in the milieu of the animal become expressive qualities, marking the territory.

2.8 The two axes of assemblages: territoriality and deterritorialisation

Assemblages can be defined as sites for creating new combinations of substances and forms of the strata, for instance humans, artefacts and animals. Deleuze and Guattari formulate the two axes of assemblages in a compact manner in the form of questions:

> On the one hand, what is the territoriality [horizontal axis] of the assemblage, what is the sign system [expression] and the pragmatic system [content]? On the other hand, what are the cutting edges [*pointes*] of deterritorialisation [vertical axis] and the abstract machines that they effectuate? (MP, 630)

Along the horizontal axis, assemblages exist in a twin form as machinic bodily assemblages and collective assemblages of enunciation. Thus, one can easily see the intuitive link between these assemblage types and the anthropomorphic stratic articulations of content (machinic bodily assemblages) and expression (enunciations).

However, in reality the link is much more complex, as first of all assemblages essentially combine elements from different strata. Furthermore, a key function of assemblages is deterritorialisation, forcing the territorial elements out of their habitual modes of being. One can here think about the new assemblages involved in the domestication of animals or the assemblages entailed by the introduction of any new technology. Indeed, even if according to Deleuze and Guattari the assemblage is

not a specifically human mode of being, the anthropomorphic stratum is particularly prone to them.

Assemblages thus have the two dimensions, machinic and enunciative, and these dimensions correspond to haecceities as intensive modes of individuation (with longitude and latitude) and to the signs marking these intensive individuations. Furthermore, Deleuze and Guattari characterise the spatiality of assemblages as *territorial*: assemblages establish territories which are manifested as habits (machinism of bodies and collectivity of enunciation). In their discussion of territoriality, Deleuze and Guattari evoke a specific kind of *ethics*, as the word 'ethos' refers both to a territory as a habitat, and to habit as a mode of being. Indeed, chapter 3 of *A Thousand Plateaus* is titled 'The Geology of Morals' in reference to Nietzsche's *The Genealogy of Morals*. Moreover, Deleuze and Guattari also argue that Spinoza's *Ethics* must be read as an *ethology*, in the sense of the science of animal behaviour. Accordingly, *deterritorialisation* is the Deleuzo-Guattarian notion characterising the transformation of an assemblage and for leaving a territory. Assemblages are thus by nature relatively volatile, despite their constitutive, horizontal dimension of repetitive, territorial habits. Indeed, along the second, vertical axis of deterritorialisation, assemblages can be ordered by their degree of deterritorialisation. For instance, along the vertical axis of assemblages, Deleuze and Guattari set the relatively deterritorialised and volatile assemblage of the *war machine* against the relatively territorialised and sedentary *state apparatus*.

I argue that deterritorialisation is Deleuze and Guattari's principal concept for creativity. According to them, the mode of being of an individual manifests concretely in its way of occupying space or a territory. Similarly, all creativity, innovation and profound change implies a kind of reorganisation – deterritorialisation – of such a spatial mode of being. In particular in the case of animal populations, deterritorialisation may refer to simply leaving a territory, but more generally for Deleuze and Guattari it refers to altering the habits which are related to a mode of

being in a certain area or space. Thus, for instance in human evolution the hand is a deterritorialised front paw, acquiring a new mode of being.

However, Deleuze and Guattari seem to define such creative deterritorialisations as relative cases of deterritorialisation, relative to a given stratum and involving a reterritorialisation, the institution of a new territory. According to them, there is also an absolute form of deterritorialisation, which pertains to the plane of consistency. One can here imagine the inflation after the Big Bang: sheer expansion in all directions, from which all forms develop. The difference is that for Deleuze and Guattari, absolute deterritorialisation is a constant basis of creativity.

I would argue that stratifying aspects of assemblages are what relativise deterritorialisation: it is as if relative deterritorialisation domesticates the creative, transformative processes, rooting them in new habits. Still, absolute deterritorialisation according to Deleuze and Guattari is immanent to the relative one (MP, 74). Indeed, assemblages have their conservative, 'stratic' tendencies, but it is essentially via assemblages that strata are taken up into something novel and transformed. Accordingly, Deleuze and Guattari call assemblages the 'surface of stratification', as well as 'interstrata' and 'metastrata', referring to the vertical axis of the assemblage (degrees of deterritorialisation). There is in the assemblage also the stratifying tendency of solidifying certain modes of being. In this case, it acts as an interstratum, conjugating different strata, ultimately leading to the formation of a new stratum. (cf. MP, 54, 627)

For instance, the agricultural assemblage has involved the conjugation of plants, animals, tools and humans, indeed a literal conjugation or yoking in the case of horses and oxen. However inventive this assemblage was at first, it is clearly part of the formation of the technical or alloplastic strata, manifest in the relatively stable habits of farming and cultivation. Nevertheless, assemblages also produce profound deterritorialisations and transformations. In this case, they act as metastrata, forcing elements of strata from their habitual patterns. (MP, 54, 93). Consequently, I

argue that destratification happens via assemblages, as a result of deterritorialisation. However, one can see that the notions of interstratum and metastratum pick out two aspects of the movements of deterritorialisation, relative and absolute: ultimately, transformations among strata are stabilised (reterritorialised); still, Deleuze and Guattari argue that deterritorialising transformations possess an absolute, creative and inventive character, which is simply moderated by the stratifying tendency of reterritorialisation and must thus be discovered ever anew.

Machinic assemblages of bodies and collective assemblages of enunciation

The horizontal axis of assemblages concerns the coexistence of content and expression, which provide a stratic and territorial view on material and expressive (linguistic) phenomena. So, the horizontal axis of assemblages develops the double articulation – content and expression – of stratification. In an assemblage, content becomes a machinic assemblage of bodies or a *pragmatic system of actions and passions*. Indeed, in a Spinozan manner, actions and passions are the affections characterising a body. Machinic assemblages are for Deleuze and Guattari simply dynamic constellations of bodies of diverse kinds. The assemblage is not a mere aggregate of bodies, but the bodies are essentially linked – put together or laid out (*agencé*) – by their actions and passions. Nor is the term 'pragmatic' here a mere synonym for 'practical' or 'concrete', as Deleuze and Guattari use it in the sense of linguistic pragmatics. Accordingly, the pragmatic system is in a reciprocal and isomorphic relation with a *semiotic system* (MP, 628). Pragmatics habitually refers to 'extra-linguistic' factors affecting the properly linguistic aspects of enunciation (cf. Anscombre and Ducrot, 1983, 78). However, Deleuze and Guattari question this marginality of pragmatics for language and its study. Instead, they argue that

the other linguistic factors (semantics, syntax, phonology etc.) stem and get their meaning and motivation from the pragmatic dimension.[10]

Still, if language and more generally sign systems are at the service of bodily assemblages, Deleuze and Guattari argue that, vice versa, the pragmatic system can only be expressed in a system of signs.[11] In the context of assemblages, expression takes the form of a collective assemblage of enunciation or a *semiotic system*, a system of signs. As a first approximation, this refers to linguistic enunciations, communication and representation. However, first of all the semiotic systems are not limited to humans but to 'territorialised animals' (MP, 630). Secondly, even in the human case, a semiotic system it is not a simple question of representing and exchanging information concerning material situations. Namely, more profoundly, the enunciative assemblages and sign systems express *incorporeal transformations* or *acts*, which concern the bodily assemblages but do not enter them except indirectly (MP, 629). For instance, in our agricultural example, such transformations could include the possession of land, the related contracts, as well as the formal hierarchy and division of labour. Indeed, one is not a farmer simply by virtue of cultivating land, but also by being in a certain juridical, or at least semiotic, relationship to the owner of the land.

2.9 Machinicity without machines

We have seen that Deleuze and Guattari characterise assemblages as 'machinic'. With the concept of machine, Deleuze and Guattari draw attention to the assem-

[10] We will consider the implications of these pragmatic considerations for a pragmatic notion of knowledge and science in chapter 5.

[11] However, despite their reciprocity and isomorphism, this relation between pragmatic, machinic assemblages and semiotic, enunciative assemblages is ultimately *contingent*; Deleuze and Guattari tie the double articulation of technicity and language to the simultaneous, 'bipolar' development of manuality (machinic, technical content) and faciality (semiotic expression) in the brain (MP, 83, 629). Thus, similarly to these two stratic articulations, the two assemblage types are intricately connected and intertwined, but ultimately independent of each other. I would argue that this independence essentially means that the relation is contingent, in contrast to for instance the Aristotelian distinction of *form and substance*, which is a mere conceptual or formal distinction, the two notions referring to the same entity.

bled and synthetic nature of desire, action and thinking. First of all, we must distinguish Deleuze and Guattari's *machinicity* from *machines* in the ordinary sense. To put it simply, what is machinic in a machine is its *mode of operation*, not its particular material set-up or parts, even if it is intrinsically bound to them. Indeed, Guattari later cites Varela's description of a machine as 'all the inter-relations of its components independently of the components themselves' (Guattari, 1992, 61). Deleuze and Guattari refer to machines in the usual sense as 'technical machines' (*machines techniques*). However, I argue that technical machines are not at all foreign to Deleuzo-Guattarian machinicity or *vice versa*, and that for them technicity, technical productivity and production are based on a more general machinicity. This is relatively evident in *Anti-Oedipus*, but we will see in Part II that machinicity also continues to have an essential link to technics in *A Thousand Plateaus*.

The status of machinicity in Deleuze and Guattari's thought is complex: on the one hand, in *Capitalism and Schizophrenia*, machinicity and machines are predominantly the expressions of *desire*. In the context of desire, machinicity is consequently mainly an aspect of anthropomorphic phenomena, although Deleuze and Guattari never forget to stress the heterogeneous composition of the 'machinic assemblages' and of their underlying flows and traits. However, *abstract machines* are clearly not limited to anthropomorphic phenomena, and later in *Cinema I*, Deleuze speaks of 'a machinic universe'. Still, there is a strong tension between the anthropomorphic and social determination of machines and the more creative and metaphysical role of *abstract machines*.

I argue that for Deleuze and Guattari, machinicity is an all-encompassing aspect of reality, and that only the technical and social machines are distinctly anthropomorphic. However, the all-encompassing nature of machinicity is *processual*, heterogeneous and, paradoxically *local* – it does not have a single, general form. Thus, a machine or machinicity is not a general model that can be applied unproblematically to all phenomena, but a *real, distinct mode of being*, the actual nature of

which must be considered in each individual case separately. This is, by the way, the reason Deleuze and Guattari are reluctant to speak of *The* Abstract Machine, as abstract machines precisely lack *form* in the Aristotelian sense. In this section, I will first present the background of Deleuzo-Guattarian machinicity in the critique of mechanistic models. I will then briefly discuss the concept of *desiring machines* in *Anti-Oedipus*, after which I will move on to machinicity as it appears in *A Thousand Plateaus*. However, the concept of machine has a very different role in the two works, and I will explain this difference in the next chapter, which discusses the concept of *synthesis*. Furthermore, I will discuss the relation of machinicity and technology in Part II.

2.9.1 Machines without mechanism

We saw above in Section 2.3 that the affectivity of Deleuzean bodies is essentially distinguished from organisms. I argue that affectivity is also an important characteristic of machines, which however must in this respect be distinguished from *mechanisms*. As A.N. Whitehead suggests, in the mechanistic mindset, reality is essentially conceived in quantitative terms of *space, time and mass* (Whitehead, 1967 [1925], 51). Thus, it was originally the physicalistic world-view introduced in the seventeenth century in particular by Galileo, Descartes and Francis Bacon.

In addition to its spatio-temporalism, another key aspect of mechanism is its *determinism*. That is, in the mechanistic view, the functioning of a phenomenon is reduced to its actual, spatio-temporal configurations, which determine its next state and consequently also all its future states. However, this reductionism creates the problem of accounting for novelty, as all future events are simple developments and unfoldings of the current states of affairs.

In fact, I argue that the contemporary physicalistic framework has retained the essentials of seventeenth century mechanistic thinking. Despite the later introduction of electro-magnetism and quantum mechanics with its probabilism and indeter-

minateness, the core questions and problems of physicalism seem intact. Admittedly, the Viennese logicism of the early twentieth century as well as the Kantian tradition modified the talk of 'laws of nature' by treating them as linguistic propositions. I argue that the focus on the propositional form of knowledge led to a general scepticism concerning the possibility of absolute knowledge. However, the logicistic and the Kantian or critical traditions also have their roots in seventeenth century discourse, to which they seem to mainly add a critical or linguistic distance. I argue that this means that the mechanistic world view continues to be largely held, but treated as a feature of our *representations* (and not of reality itself) or as naturally integrated in scientific theories. Thus, I argue that the critique of mechanism is still necessary to curb this tendency of thinking.[12]

The critique of the mechanistic world view developed in the nineteenth century, first in German idealism and romanticism, and was inspired by Immanuel Kant's *Critique of Judgment* and its theory of a teleology of living nature compatible with physical determinism. However, this critique was also influenced by such emerging objects of scientific inquiry as electricity and chemistry, which did not fit the crude mechanistic model (Beiser, 2005, 83–85). The critique of mechanism was later also taken up from a non-teleological perspective, notably by Henri Bergson and Whitehead. They both based their critique on holistic arguments: mechanistic models cannot account for heterogeneous, continuous wholes such as living organisms and their evolution. Thus, for all of these anti-mechanistic thinkers, the inability to account for organic or biological phenomena was a central argument against the mechanistic model.

[12] Most importantly, metaphysical realism has been replaced by a *linguistic fetishism*, where the old metaphysical categories are retained, but they are simply interpreted as linguistic categories or logical structures. Dogmatism seems to be vanquished when one does not claim to talk about reality but simply of its *linguistic representation*. However, it would seem that here one abandons allegedly dogmatic assumptions concerning reality in favour of dogmatic assumptions concerning linguistic or logical categories. Also, I argue that such dogmatism concerning the *form* of knowledge is even more dogmatic than a dogmatism concerning the *content* of knowledge.

What kind of an alternative does the Deleuzo-Guattarian machinic framework propose in the place of spatio-temporally determined mechanisms? First of all, Deleuze and Guattari do not deny the existence of spatio-temporal mechanisms but according to them, these mechanisms simply do not exhaust all of reality. With their own machinism, they propose three basic features as complements of the mechanistic point of view: (1) the reactions between bodies are due to their capacity to receive actions and produce them (affectivity), (2) the capacity of an individual may be augmented or diminished, (3) machines are essentially open, heterogeneous systems.

2.9.2 Desiring machines

In *Anti-Oedipus*, Deleuze and Guattari analyse *desire* in terms of machines and production, or *machinic production*. First, they argue that particularly in Christian, economic and psychoanalytic traditions, desire has predominantly been conceived in terms of *lack*. That is, we desire something we do not have. According to Deleuze and Guattari, here desire is assimilated to the *object* of desire and consequently desire is reduced to the lack of this object. However, they argue that by conceiving desire in these terms, the concrete or bodily nature of desire is forgotten as well as its inherent productivity.

Accordingly, Deleuze and Guattari approach desire as an embodied phenomenon. However, a second important notion relates to the way this embodiment must be understood. Namely, for them it is not sufficient to acknowledge the materiality of desire as anchored in a human body, but we must also discover the multiplicity inherent in the body. That is, as we saw above, desiring processes involve particular material substances or organs conceived as partial objects. In this view, the different organs and material flows of substances are distinct, heterogeneous elements which, however, can only function as interconnected. Despite the importance of the interconnected dynamics of the elements of desire, Deleuze and Guattari argue

that situating desire at the level of the whole organism altogether compromises the multiplicity of these heterogeneous elements.

In *Anti-Oedipus*, Deleuze and Guattari call the material elements that produce desiring processes *desiring machines*. Desiring machines always come in two: on the one hand there is a desiring machine producing a material flow (e.g. a breast producing a milk flow), and on the other hand, another desiring machine cutting this flow (the infant's mouth sucking the milk). Naturally, the breast and the mouth are connected to a varying network of other machines, where each of them operates both a productive and a cutting function in different contexts. Thus, the breast performs the cutting function in relation to the processes producing the milk and the mouth transmits the milk onwards to other organs.

Put briefly, for Deleuze and Guattari desire is machinic or productive and it is not anchored in an organism but in individual, heterogeneous, material elements. Thirdly, the machinic elements are not limited within the confines of the human body but include all material processes connected to it. Also, there is in machines no *a priori* exclusion of other beings, such as animals, plants or inanimate things.

2.9.3 Machinic assemblages and abstract machines

In all of Deleuze's works, *machines* are *productive processes*. However, as I will argue in the next chapter, the role of this concept changes significantly from *Anti-Oedipus* to *A Thousand Plateaus*. To put it briefly here, machines change from constitutive to creative and transformative processes. Here we will concentrate on the notion of machinicity in *A Thousand Plateaus*.

I argue that in *A Thousand Plateaus*, machinicity and machines ultimately refer to *abstract machines*. The concept of abstract machine is introduced as a kind of virtual principle of operation or production:

> Abstract machines consist of unformed matters and nonformal functions. Every abstract machine is a consolidated aggregate of matters-functions

> (phylum and diagram). This is evident on a technological 'plane': such a plane is not made up simply of formed substances (aluminum, plastic, electric wire, etc.) or organising forms (program, prototypes, etc.), but of a composite of unformed matters exhibiting only degrees of intensity (resistance, conductivity, heating, stretching, speed or delay, induction, transduction...) and diagrammatic functions exhibiting only differential equations or, more generally, 'tensors'. (MP, 562/511)

As in *Anti-Oedipus*, machines still involve a kind of heterogeneous connecting, *assembling* or putting together – hence the concept of *machinic assemblages* we just discussed. However, a machinic assemblage of bodies is connective and machinic in virtue of its vertical axis of deterritorialisation, and deterritorialisation is for Deleuze and Guattari precisely the essential function of an abstract machine within the assemblage (MP, 636–37). In a way, an abstract machine creates the individuality of the assemblage, but it does this first of all by transforming the habits characterising a milieu or a territory and by thus increasing their openness and connectivity. Furthermore, it may thus also leave the assemblage open for further transformations and deterritorialisations.

Machinicity is a creative force, which creates all assemblages but also tries to undo them by yet creating something new. I argue that this is a fundamentally Bergsonian dualism, between a creative impulse and a conservative one. However, I would argue that for Deleuze and Guattari the conservative, stratic tendencies or forces and the machinic, transformative ones are immanent to each other, as in the conservative processes there is simply less variation and change is slower than in the transformative processes. Nevertheless, Deleuze and Guattari do complicate this dualism between stratic tendencies and machinic tendencies. Namely, an abstract machine piloting creation is one tracing a *plane of consistency*. Now, in addition to the (1) abstract machines of consistency, Deleuze and Guattari also name two

other principal types of abstract machines: (2) of stratification and (3) over-coding or axiomatic ones (MP, 640).

This variety of abstract machines would seem to be a consequence of the definition of abstract machines as the *operators of decoding and deterritorialisation* which consequently 'ignore forms and substances' (MP, 636–37). Thus, stratification itself is paradoxically the result of an abstract machine, as the formless and unsubstantial machine is what creates forms and substances in the first place. Furthermore, as we saw above, this process is developed further by the double articulation of content and expression. From another point of view, axiomatisation and over-coding seek to homogenise and totalise reality, and these operations appear as processes of decoding and deterritorialisation. (MP, 640) For instance, in the privileged example of capitalism, seeing it as homogenising axiomatisation allows us to fit together both its transforming and uniforming tendencies. Deleuze and Guattari argue that capitalism transforms existing processes and habits by decoding them and thus liberating them from their existing patterns. However, it does this only in the framework of a homogenising axiomatics, which enables the commensurability of the processes as elements of a global market.

The main consequence of the variety of types of abstract machines is that transformative processes are ultimately ambiguous. In fact, Deleuze and Guattari suggest that one can assess the degree of machinicity of different processes only as they appear in *assemblages*, essentially by virtue of the degree to which they 'open and multiply connections' (MP, 639).

2.10 Overview of the chapter

In this chapter, we have seen that *A Thousand Plateaus* develops the theme of intensive materiality in several different contexts. The affectivity of bodies expresses their dimension of power, or their capacity to produce and receive affections. The

plane of consistency, on the other hand, provides a general framework for intensive materiality as unformed material processes. More importantly however, it serves as reference point for creative processes undoing the restricting influence of the strata and territories. Through the operation of an abstract machine, intensive materiality appears as a material continuum, or 'phylum', coupled with the expressive traits of a 'diagram'. Furthermore, I proposed that machinicity for Deleuze and Guattari essentially characterises the operative side of intensive, heterogeneous systems.

Thus, the plane of consistency is essentially defined by its tension with stratification and territoriality. Creative transformations happen as assemblages and from within assemblages, as they imply the reconfiguration of elements taken up in strata and territories. Assemblages thus produce territories, but apart from this limiting, territorialising tendency, a creative, deterritorialising tendency is also active in assemblages, operated by an abstract machine and tracing a plane of consistency.

In the next chapter, we will see how the theme of machinicity in *A Thousand Plateaus* expresses tendencies already present in Deleuze's earlier work. Machinicity will also provide us with a guiding thread from intensity to technics. Namely, as I will argue, in *A Thousand Plateaus*, machinicity replaces the concept of *synthesis* as the model of intensive production of material phenomena.

Chapter 3

From syntheses to synthesisers

One cannot help but notice the ubiquitous presence of different *syntheses* in Deleuze's works from *Difference and Repetition* to *The Anti-Oedipus*. I see this as a clear sign of the dynamic spirit of Deleuzean thinking: philosophy and thought are not primarily a matter of analysis and representation, but of operations and processes, dynamisms of all kinds. I would further argue that it is a guiding thread that allows us to see the profound link between *intensity* and *machinicity*. First, passive syntheses in *Difference and Repetition* already manifest the inherent machinicity of intensity, which will be elaborated in his later works. Second, in *A Thousand Plateaus* the themes of machinicity and technicity are brought together precisely in a new concrete figure of passive synthesis, the *synthesiser*.

As a tentative definition, a synthesis for Deleuze *is an operation that establishes a connection between given elements.* In order to specify the nature of these elements, we must first elaborate the nature of their (synthetic) connections. At this most general level, it is thus compatible with the Kantian and idealist sense of synthesis. However, the clearest point of divergence from the idealist tradition lies in Deleuze's destitution of the primacy of *unity* and *identity* of consciousness, experience and knowledge. To put it briefly, I argue that while for Kant and other German idealists $\sigma\upsilon\nu$- means 'one' and unification, Deleuze, by contrast, stresses the senses 'together'

and 'with'. Namely, Deleuze assimilates synthesis with *composition* and assembling, which, as we shall later see, will replace the concept of synthesis. That is, a Deleuzean synthesis is simply a coming together of diverse series or processes, while for Kant and other idealists it is primarily the expression of an underlying unity within an apparent multiplicity. As Kant puts it:

> By synthesis, in its most general sense, I understand the act of putting different representations together, and of grasping what is manifold in them in one act of knowledge (Kant, 1990, A77/B103).
>
> Combination is representation of the synthetic unity of the manifold. The representation of this unity cannot, therefore, arise out of the combination. On the contrary, it is what, by adding itself to the representation of the manifold, first makes possible the concept of the combination. (Kant, 1990, B130–31)

For Deleuze, the apparent unity manifested by a synthesis is simply an effect resulting from its operation, while Kant and other idealists (e.g. Reinhold and Hegel) see it as an expression of a more fundamental unity.[1]

Another important feature of this Deleuzean deunification of the syntheses of experience is the destitution of representation and consciousness as the conditions of

[1] With Kant, the case is unambiguous, as a synthesis in a judgment presupposes the unity of apperception as its condition (Kant, 1990, A107). Other idealists shared Kant's conception of synthesis, e.g. Reinhold (cf. Beiser, 1987, 260). Hegel is another important point of reference in this context, but his case is more complex, as for one he famously does *not* use the term 'synthesis' in his dialectical account of knowledge (Beiser, 2005, 161). Indeed, *dialectics* would seem to be the Hegelian synthetic mechanism, with the abstract concept as its starting point and the Absolute as its goal. Despite neglecting the term 'synthesis', Hegel is of interest for us here, for similarly to Deleuze, his dialectics has cosmic aspirations, but with fundamentally different presuppositions from Deleuze's. For Hegel, the unity of the concept and of knowledge is an implicit presupposition rather than an explicit requirement for each cognition, as with Kant. This can be seen from the fact that the Hegelian progress of knowledge appears as negativity: each stage of knowledge and determination of the concept negates the previous one (cf. Beiser, 2005, 167–68). However, as Deleuze argues in *Difference and Repetition*, this progression of negative dialectics is founded on the identity of the concept, which is only reinforced via the successive negations (DR, 70–71; cf. LS, 202). Thus, just as with Kant, though in a different manner, the Hegelian synthesis of the Absolute also anticipates the form of its outcome as the identity of the initial concept, if only as implicit and mediated by negations: 'Hegel's circle is not the one of eternal return, but only the infinite circulation of the identical through difference' (DR, 71).

experience, which loom large in the idealist and rationalist philosophical traditions. Why then retain the notion of synthesis which precisely accounts for the conditions of knowledge as representation of reality? I argue that Deleuze wants to safeguard the Kantian discovery of a kind of operationalism involved in experience and thought. That is, we are not simply clean slates receiving the imprints of external stimuli, but experience emerges as the interplay of stimuli and cognitive processes. This basic Kantian intuition is a mainstream notion today, but Deleuze wants to take it several steps further: we cannot limit experience, and not even thinking, even conceptually, to human, conscious cognition. Rather, our account of experience must account for all the passive constituent processes involved in it. In short, Deleuze is after a *cosmicisation* of experience and thought. In some sense, this resembles the Hegelian endeavour at least in its cosmic aspect, but contrary to Hegel (and to Kant), according to Deleuze, the synthetic nature of experience must be seen as *passive*, independent of consciousness.

3.1 Passive synthesis

The syntheses by which Deleuze aims to account for the dynamics of phenomena are *passive*. I would argue that this passivity primarily means *independence of (active) consciousness*. Namely, especially in the Kantian framework, consciousness and activity are intimately associated: conceptual, synthetic activity is what consciousness boils down to (cf. Kant, 1990, A120). For Kant, this is also the main human mode of being active, separating our cognitive activities from merely natural beings determined by the laws of nature. However, our synthetic conceptual activity also separates us from God, or from a divine form of activity, which according to Kant consists in creating, not mere *concepts*, but reality itself through 'originary intuition' (Kant, 1990, A546–47/B574–75; B72). That is, the active, conceptual component

of human knowledge is for Kant essentially a medium for sieving and organising the passive influx of sensations.

By contrast, Deleuze draws on several thinkers who in different manners have acknowledged the importance of pre- or unconscious, passive processes for experience: first Kant, Hume, and more recently Nietzsche, Freud, Husserl and Bergson. Deleuze's key insight is that the problems in most philosophical accounts of human cognition and action stem mainly from the dogmatic presupposition of the conscious nature of all human activities. And even if the mind is accorded a passive dimension in these accounts, it is still often modelled according to the active, conceptual point of view. To name but a couple of simple examples, contemporary philosophy of mind usually adopts the *proposition* as the model for mental states of all kinds, as if there were an active, conscious subject pronouncing judgements in the mind. On the other hand, in contemporary moral philosophy – following the Kantian paradigm – moral action is presumed to be the pursuit of rational, conscious, active agents.

However, Kant already allowed for the passive nature of temporal and spatial intuitions, which deliver us our sensual data. But what makes this passive intuition a possible source of knowledge is precisely its compatibility with our active, conceptual faculty. (Kant, 1990, A50–52/B74–76) It would also seem that in most contemporary philosophical accounts of experience, the passive or unconscious dimension is only an empirical fact, with no theoretical or transcendental status. Thus, the Kantian conception seems to prevail: only consciously observable phenomena and the concepts and logical syntax used in their description are possible objects of philosophical reflection.

However, for Deleuze, while passive syntheses are operations constitutive of conscious experience, they nonetheless do not depend on the eventual form of consciousness framing the experience, *pace* Kant.

> Each contraction, each passive synthesis is constitutive of a sign, which is interpreted or deployed in active syntheses. The signs by which the

> animal 'senses' the presence of water do not resemble the elements which the thirsty organism lacks. (DR, 100/73, transl. modified)

From a Deleuzean point of view, it is crucial that passive syntheses are *operative*, in spite of their passivity in principle, that is, the autonomy from consciousness and from our conceptual faculty. Namely, most material dynamisms, operations and processes are not active in the sense of being conscious. Nevertheless, they are synthetic inasmuch as they affect the material they synthesise and produce something different from it.

Here, Deleuze is clearly inspired by Husserl's notion of passive syntheses as well as the latter's critique of Kant. Anthony Steinbock has provided a useful summary of the various aspects of Husserl's notion of passivity and passive synthesis in his 'Translator's Introduction' (Steinbock, 2001, in Husserl, 2001, xxxviii-xliii). Among the features listed by Steinbock, Deleuze's account first of all shares the notion that passive syntheses constitute law-like, associative processes and habits, as well as the absence of the active I or ego and its acts of consciousness (perception, judgment etc.). Furthermore, Husserl and Deleuze both see the passive syntheses as a genetic condition of the active ones. However, the Husserlian account of these structures and dynamisms is arguably still dominated by the model of human consciousness. By contrast, Deleuze does not acknowledge any fundamental (anthropomorphic or conscious) limits to passive syntheses – they characterise all processes and dynamisms combining heterogeneous elements. Incidentally, I argue that many of Husserl's formulations are perfectly compatible with Deleuze's theory, provided that one does not restrict passive syntheses *a priori* to human experience. Indeed, as human senses function on the basis of elementary physical and chemical reactions and processes that are not confined to the human body, where could one draw the line between human and non-human passive syntheses? Here we should not be distracted by the false problem of reducing the mind to matter, but rather we can think of human perception as a complex organisation of elementary processes.

Deleuzean passive syntheses are dynamisms independent of human consciousness and thus they are essentially *non-conscious*. It should be noted however that Deleuze does postulate an elementary or 'larval' consciousness, which is the passive experiential dimension: experience does not only emerge at the level of consciousness but must develop at the level of the *spatio-temporal dynamisms* of the passive syntheses.

> Every spatio-temporal dynamism is the emergence of an elementary consciousness which itself traces directions, doubles the movements and migrations, and emerges [*naît*] at the threshold of condensed singularities in relation to the body or the object of which it is the consciousness [*dont elle est conscience*]. (DR, 284/220, transl. modified)

Thus, Deleuze assimilates spatio-temporal dynamisms with the emergence of an elementary consciousness. Furthermore, in a somewhat Spinozan manner, Deleuze calls this consciousness the 'double' of a thing or body. Usually, Deleuze refers to these elementary consciousnesses as *larval subjects* (*sujets larvaires*), which are 'the support or patient of the dynamisms'. For instance, Deleuze describes the embryo as the support in the development of its qualities and parts, or yet the philosopher as the support of the development of a system of thought (DR, 155–56).

Furthermore, active syntheses are also defined by *signs*. That is, signs are effects or signals produced by passive syntheses that are interpreted by active syntheses and a source of their action (DR, 100). Deleuze defines signs as the mode and form in which passive syntheses appear to an active synthesis. While they are components in active syntheses, they also 'express the productive dissymmetry' of the system in which they appear. Thus, signs in Deleuze's sense are essentially *signals*, resulting from the actualisation of a difference of potential (DR, 31, 35).

So, perception is based on a cascade of passive syntheses, but Deleuze hastens to add that the essential context of passive syntheses is not perception, nor signs and action based on their interpretation, but the formation of *habits*. It is as if all of

nature were for Deleuze a kind of kaleidoscope producing and developing a multitude of habits. Secondly, Deleuze makes the surprising claim that habits are not formed by action, but instead by *contemplation* (DR, 100). We will explain this notion more in depth in the next section, but to put it briefly, contemplation is *an affective relation between two elements*. More precisely, contemplation is the act or operation by which a process of passive synthesis appropriates something as its element. A biological example would be photosynthesis, in which a plant 'contemplates' light and carbon dioxide. The idea here is not so much to humanise plants, as if they had eyes or manifested cerebral activity, but on the contrary to *naturalise humans* – to see human activities as a development of non-human natural and physical processes.

However, Deleuze's naturalism does not consist in reducing human, conscious processes to other natural processes – a common interpretation of naturalism. Instead, for Deleuze the naturalisation of the human means that the so-called human processes are variations or complexifications of other natural processes. Conversely, these natural processes can also be seen as variations of the human ones, of a different degree of complexity. Could perception be a variation of a basic dynamism or operation taking place e.g. in photosynthesis? If this is possible, Deleuze suggests 'contemplation' is such a basic, synthetic dynamism. Especially in the light of Deleuze's later accounts of machinicity, I argue this dynamic naturalism without reduction should be called 'machinism'. In *Difference and Repetition* and *The Logic of Sense*, Deleuze's machinism is very close to Simondon's approach to phenomena as dynamic systems, which is the backbone of Deleuze's theory of individuation in these works, as I argued in Section 1.5.

What is the structure of passive syntheses? I would argue that in all of Deleuze's work, synthetic dynamisms have the function of accounting for the three dynamic dimensions of various *systems*. The nature and domain of these systems vary considerably in Deleuze's oeuvre, but we can discern a basic scheme, based primarily on *The Logic of Sense*:

1. Connective synthesis, linking the elements of a series
2. Conjunctive synthesis, establishing a communication between at least two series.
3. Disjunctive synthesis, linking bifurcations and tensions in a heterogeneous system

This basic scheme undergoes significant variation and gives structure to a wide array of phenomena. As a rule, the passive syntheses account for the functioning of the *unconscious*, most markedly in *Anti-Oedipus*, but this synthetic unconscious can usually be assimilated to the *non-conscious*, i.e. all the phenomena and processes independent of human consciousness, not simply a part of the human psyche. Due to the limited space of the present work, we must content ourselves with a table listing the different forms of synthesis in Deleuze's works, instead of discussing them in all their detail (see Tables 3.1, 3.2). We shall first discuss the account of temporal syntheses in *Difference and Repetition* and gradually move towards the machinic interpretation of passive syntheses in *A Thousand Plateaus*. However, I will demonstrate that the properly machinic element is already present in the third temporal synthesis of *Difference and Repetition*.

3.2 Intensity in the first passive synthesis: contemplation and contraction

The intensive nature of passive syntheses is perhaps most evident in *Difference and Repetition*, where both notions are developed for the first time. I argue that passive syntheses happen within the mode of intensity, and intensity thus provides the context for passive syntheses. This can be seen e.g. in the psychic context, with regard to the primary excitations at the unconscious level, which constitute a heterogeneous, but continuous field of variation. According to Deleuze, our conscious experiences are mere developments of such unconscious excitations, which appear as intensive differences:

Table 3.1 – Passive Synthesis

Book	Context	Dimension of Passive Synthesis		
DR	Constitution	Foundation	Ground	Ungrounding
DR	Time	Present	Past	Future
DR	Present, Habit	Duration, living present	Retention	Expectation
DR	Past, Memory	Contemporaneity with past present	Coexistence with new present	Pre-existence to passing present
DR	Future, Action Trans-formation	Caesura, Becoming equal, Metamorphosis	Before, Lack, Incapability	After, Excess, Eternal return
DR	Psyche	Binding	Memory, Virtual object	Death, Transformation
LS, AO	Relation, Syllogism	Connective	Conjunctive	Disjunctive
LS	Series of events	Contraction	Coordination	Ramification
AO	Desire, Unconscious, Social pro-duction	Machinic connections, Production	Consummation, Consumption	Inscription, Registration
AO	Energy	Libidinal	Voluptas	Numen
MP	Ritornello	Milieu, Territorial	Territory and Earth	Cosmic
MP	Music	Classical	Romantic	Modern
MP	Lines	Rigid	Supple	Line of flight
MP	Stratification	Content	Expression	Destratification

Table 3.2 – Active Synthesis in DR

Context	Element of Active Synthesis		
Faculties	(Imagination, passive)	Memory	Understanding, Intelligence
Kantian moments of synthesis	(Apprehension)	Reproduction	Recognition
Perception	(Sensation)	Instinct	Learning
Memory	(Passive syntheses)	Reproduction of old present	Reflection of actual present

> Biopsychic life implies a field of individuation in which differences of intensity are distributed here and there, in the form of excitations. We call the both quantitative and qualitative process of the resolution of difference by the name 'pleasure'. Such a whole, a moving distribution [*répartition*] of local differences and resolutions in an intensive field corresponds to what Freud called the Id, or at least the primary layer of the Id. (DR, 128)

The Id (*le Ça*) is the unconscious level of the psyche, which Deleuze here assimilates to an intensive field of individuation. Although the context here is psychic, as we already noted, an intensive field of individuation may operate in any sphere of reality, e.g. physical or biological. Whatever the domain, it is the dynamic context or environment where passive syntheses take place.[2]

By contrast, active syntheses imply an active, conscious subject, who represents the world to itself in terms of extensive structures (as spatio-temporal quantities and qualities). In a manner strongly reminiscent of Kant, Deleuze defines the active syntheses as forms of conscious *recognition*, where an experience is reproduced by the imagination based on passive syntheses. Moreover, the active, conscious component of the synthesis consists of its identification with a concept, a representation. This can happen e.g. from the point of view of perception or memory – an object of perception is recognised or a past event is recalled and reflected upon in the present.

However, according to Deleuze, the active syntheses are always based on passive ones. Active synthesis is like a flash of consciousness at the end of a cascade of passive syntheses building up towards it. According to Deleuze, active and passive syntheses are separated by a threshold of consciousness. Below this threshold, the excitations are contemplated and contracted, while above it they produce perceptible effects as signs to be interpreted and integrated in active syntheses. Due to the crossing of this

[2] I would argue that later on, Deleuze will replace the Freudian *Id* with the impersonal *it* (*il*), which represents the pseudo-agency of an *event* (e.g. 'it rains', *il pleut*) and refers to an intensive field of individuation, instead of individual, unconscious drives (See Deleuze, 1980; LS, 178; DR, 128).

threshold of consciousness, the active syntheses are always characterised by a loss of their immediate contractive relation to what they signal (DR, 31). Furthermore, as we saw above in Section 3.1, Deleuze claims that there is a difference in kind between the signs and the passive syntheses producing them, which is why they do not resemble each other:

> Each contraction, each passive synthesis is constitutive of a sign, which is interpreted or deployed in active syntheses. The signs by which an animal 'senses' the presence of water do not resemble the elements which its thirsty organism lacks. (DR, 100/73, transl. modified)

I argue that for Deleuze, active syntheses are defined by the accompaniment of consciousness; here one may think of Kant's 'I think', which potentially accompanies all representations. Accordingly, passive syntheses are essentially unconscious or non-conscious, independent of consciousness. Thus, Deleuze interprets the range of the unconscious more broadly that Freud, for whom the unconscious is essentially something happening in an individual mind. Freud does consider the biological dimensions of psychic life to some extent, but the psychic constitutes a realm of its own, more or less separate from the rest of nature. But unless one simply assumes from the outset that the psyche and the human mind form a clear-cut domain, what could be the basis of such a distinction? Instead of maintaining the classic, dualist distinction between (anthropomorphic) consciousness and the 'external world' or nature (or mind and body, thought and extension etc.), Deleuze advocates a panpsychic model, where the same basic dynamic elements, i.e. also 'psychic' ones, can be found at any level of reality.

As mentioned above, the basic figure of passive syntheses is *habit*, and habits are formed through *contemplation* (affection of one element by another one) and *contraction* (synthesis or combination of elements in the contemplation).

> What we call wheat is a contraction of earth and humidity, and this contraction is both a contemplation and the auto-satisfaction of that contemplation. By its existence alone, the lily of the field sings the glory of the heavens, the goddesses and gods – in other words, the elements that it contemplates in contracting. What organism is not made of elements and cases of repetition, of contemplated and contracted water, nitrogen, carbon, chlorides and sulphates, thereby intertwining all the habits of which it is composed? (DR, 102)

Deleuze thus proposes contemplation as a universal synthetic operation. But whence this unusual terminology? Deleuze appropriates his notion of contemplation from Plotinus. Indeed, 'contemplation' is the Latinate translation of the Greek (and Plotinian) *θεωρία* or *θεωρεῖν* (cf. The Enneads, 3.8). 'Theoria' or contemplation was for the Greeks in general a *divine intuition*, intuition or vision concerning goddesses in particular. How then could it possibly be a dynamic principle reigning in the material world? Deleuze claims that Plotinus's notion of contemplation is already a profoundly empiricist one (DR, 102). I would argue that relevant here is the *immediate* nature of the contemplative relation and its independence from the mediation of concepts. Indeed, this coheres with the classical empiricist supposition of the primacy of immediate sensations and affects, manifest in the passage from Hume quoted in Section 1.2 (see Hume, 2007, 252). Moreover, in Section 3.1, I defined Deleuzean contemplation as 'affective relation between two elements', thus making it the practical synonym for *affection*. I claim that the main difference between contemplation and affection is that contemplation includes an idea or image of the operation, while the notion of affection in itself does not. On the other hand, *contraction* is the combination of things or elements, following this affective contemplation. According to Deleuze, contractions constitute *habits*.

Habit as contraction does not merely mean a repeated action as an element of repetition, but 'the fusion of this repetition in the mind that contemplates' (DR,

101). Indeed, Deleuze postulates a mind (*esprit*) for every habit, but this mind or soul (*âme*) is a passive, local self (*moi passif/local*) that carries out the contemplation.

> We must attribute a soul to the heart, to muscles, nerves, cells, but this is a contemplative soul whose only role is to contract habits. [This general nature of habits] concerns not only the sensorimotor habits that we possess (psychologically), but first of all the primary habits that we are, the thousands of passive syntheses that compose us organically. (DR, 101)

The constitutive processes or operations are thus for Deleuze primary with regard to their elements – the objects of contemplation. It is by these operations – syntheses – that things exist. These operations appear as contractions, combinations of elements. A process of contracting constitutes a habit, and here again it is this habit-forming process (contracting by contemplating) that is relevant, not the contracted elements or their synthetic unity. Indeed, for Deleuze, the passive synthesis of habit is only unified insofar as it contracts elements which it contemplates. Furthermore, this unity is nothing outside the habit, i.e. continuity of the process, which must be constantly repeated.

In *Difference and Repetition*, habit is also the first temporal synthesis, constituting the immediate present (see Table 3.1). Echoing Husserl, the immediate present of habit is not simply a punctual *now*, but includes its immediate past as *retention* and the immediate future as *anticipation* or expectation (*attente*, Husserl would speak of 'protention'). However, not only does Deleuze claim that all our experience has its source in passive syntheses shared with all other dynamic processes. He goes on to say that *time itself* is constituted by these passive syntheses. In fact, I argue that here Deleuze is here still working within a Kantian framework, but, as Hughes argues, influenced by Heidegger's reading in *Kant and the Problem of Metaphysics*.

Namely, Heidegger argues that Kant's first account of the three moments of the synthesis – apprehension, reproduction and recognition – deploys the threefold structure of time as presenting the present, reproducing the past and anticipating the future. (Hughes, 2009, 97–99; Heidegger, 1991, 176–88) Heidegger also claims that this not a mere human, cognitive reaction to time and temporal phenomena, but it is time itself working in us. However, while Deleuze also reads Kant's theory of synthesis through this tripartite formulation, nevertheless in contrast with Heidegger, he first of all renounces all traces of human subjectivity and consciousness still featuring in Heidegger's account. Moreover, in contrast to Heidegger, Deleuze underlines the *locality* of the temporal syntheses: time is not a global, general structure, but instead it is deployed locally and individually in each passive synthesis.

3.3 The second synthesis: memory, grounding and the pure past

In *Difference and Repetition*, the second synthesis concerns the temporal dimension of *pure past*. The pure past constitutes a kind of ground (*fondement*) of actual experience and representations, but more properly I argue that it is only the *movement* of grounding. The first synthesis of habit was the immediate *founding* synthesis (*fondation*) of time as present, retaining the immediate past and anticipating the immediate future and contracting these in the fusion of the present (DR, 96). Prefiguring the theory of territoriality in *A Thousand Plateaus*, Deleuze describes the first two syntheses in terms of occupying land or a territory:

> The foundation concerns the soil: it shows how something is established upon this soil, how it occupies and possesses it; whereas the ground comes rather from the sky, it goes from the summit to the foundations, and measures the possessor and the soil against one another according to a title of ownership (DR, 108).

In fact, the translation 'ground' and even 'grounding' of *fondement* is slightly misleading, as Deleuze describes this grounding as coming from the sky or from heaven (*ciel*), top-down as it were, like a judicial claim on a property. Indeed, I argue that *laws*, natural and judicial ones alike, are cases of grounding, since they transcend the phenomenon they ground. One can here remember the traditional, divine source of judicial authority as well as the astronomic contemplation of celestial movements as a way of predicting seasonal changes and the timing of floods.

I argue that for Deleuze, the active synthesis of memory is the one that especially concerns representation. According to Deleuze, representation necessarily involves two elements: what is represented and a reflection of this representation; 'reproduction and reflection, remembrance and recognition, memory and understanding' (DR, 110/80). The representational structure looks essentially back in time, in the sense that the model of representation is always something pre-existing that is reflected in the actual present (DR, 109–10).[3] However, the active synthesis of memory presupposes another, passive one, which connects the present with a *pure past*. Pure past is not the ancient present of voluntary, active memory but the immemorial past of involuntary reminiscence.

For Deleuze, the paradigmatic philosophical model of the second synthesis and of memory and the past as grounding is the Platonic Idea and Plato's account of learning as remembering or reminiscence. Namely, Plato invokes a temporal difference between the present and the past, where the past (the Idea) is the ground of the present (belief, reminiscence). For Deleuze, this manifests the temporality of thought he seeks to elaborate, but the representational character of Plato's theory

[3] I claim Hughes is mistaken in presenting Deleuze's theory of the syntheses (and indeed all of *Difference and Repetition*) as an account of the genesis of representation (cf. Hughes, 2009, 16, 24). As we can see here in the context of the syntheses, representation essentially concerns the second active synthesis of memory and grounding, the third synthesis pointing precisely *beyond* representations. On the contrary, I argue that in *Difference and Repetition*, Deleuze seeks to develop alternatives to representational thinking, and while doing so, he analyses the nature of representation and tries to distinguish these alternatives from all the guises of representational thought. However, even if Deleuze is not secretive about his metaphysical ambitions, Hughes interprets the more metaphysical claims either as moments in the genesis of human experience and representations, or alternatively as arbitrary metaphors.

and its effort of grounding experience fail to unravel the temporality which is internal to thought. Drawing on Bergson, Deleuze argues for a dimension of *pure past*, which accompanies each present but is autonomous with regard to them (DR, 110–15). By contrast, insofar as the Platonic Idea functions as the ground for present knowledge, it is assimilated to a mythical, ancient *present* instead of constituting a pure past in its own right. Moreover, according to Deleuze, this ground is construed on the basis of the present representation it grounds, as the unchanging model of the representation that only *resembles* it. Thus, there is a circularity between the representation and its ground, making the ideal ground relative and insufficient.

According to Deleuze, the operation of grounding does not suffice to introduce time into thought, but simply 'movement into the soul' (DR, 119). That is, in learning the immemorial idea, the soul or mind returns to the mythical past and retrieves the in-itself of this past. However, Deleuze argues that the essential lesson of this circularity of grounding is not that we should seek a more secure foundation for our conceptions than e.g. Plato's recourse to myths. On the contrary, he argues that all attempts to ground knowledge are affected by this ultimate groundlessness, the ground being a kind of virtual effect of the movement of grounding.

Furthermore, according to Deleuze, the second synthesis of memory and grounding is based on yet another more profound synthesis, due to the ungrounded nature of both the active and passive syntheses of memory.

3.4 The third synthesis: the future and transformative action

Deleuze models the third synthesis of time as the image of *action* (DR, 125). As with the other syntheses or moments of synthesis, the third synthesis is also triple and constitutes its own figures of the present, past and future. In the third synthesis, the present is assimilated with an agent, past with the condition of the action and

the future with the action, deed or artistic work (*œuvre*) itself. I argue that the most important feature here is the ultimately unconditioned nature of time and of the future: the condition and the author are not visible in the outcome, they are as if erased in the process. Furthermore, Deleuze argues that the outcome or work itself is the object of repetition, to be taken up again and again. This is also the reason for Deleuze's characterisations of the future dimension of the third synthesis as 'excess' and 'what is repeated' (*le répété*) (DR, 122, 125). Namely, an action is on the one hand something self-sufficient, in that it effaces its condition and transforms its agent. On the other hand, however, an action is also something open to endless repetition, resumption and variation – eternal return or recurrence in Nietzsche's sense.

These two characteristics of self-sufficiency and openness of the result of action explain Deleuze's paradoxical formulations concerning the eternal return as affecting the *whole of time*, while distinguishing it from a Kierkegaardian act or leap of faith characterised by the expression 'once and for all' (*une fois pour toutes*) (DR, 122, 126). The decisiveness of the affirmation of eternal return stems from the asymmetrical relation between the before and the after of the action: a formidable action seems impossible before it takes place, while its taking place leaves the I fractured (*le je fêlé*) as external to the experiencing self and scatters the self (*le moi*) along the line of time. That is, a formidable, transformative action is something that is carried out by something within the individual – by the active I – which is not an object of experience, but also happens to the individual – to the self – which however is subject to the flow of time (DR, 120–21).[4] All this would seem in

[4] Deleuze's theory of the fractured I and scattered self in *Difference and Repetition* is inspired by Kant's critique of Descartes' Cogito argument as well as by Kant's analysis of auto-affection of the subject in the *Critique of Pure Reason* (see DR, 116–17). In a nutshell, Kant criticises Descartes for not accounting for the form of determinability of experience, which according to Kant is *time* and temporality. That is, all existence must be determinable in time and this is why the Cartesian cogito does not work all the way: we should first establish that the being expressed by 'I think' is temporal or determinable in time, which Descartes merely takes for granted. Second, Kant thus ties our immediate, passive, empirical existence together with time and temporality and distinguishes this passive temporality from the active principle 'I think', which affects our temporal existence. However, Deleuze points out that our thinking thus becomes something external to our

principle compatible with Kierkegaardian acts of faith, but Deleuze distinguishes the concepts of 'singular action', (artistic) 'creation', and 'emergence of the new' from the Kierkegaardian acts of faith by the openness of the former actions to repetition and variation. Namely, according to Deleuze, in the Kierkegaardian leap of faith, 'the self of habit and the god of reminiscences' are momentarily abandoned in the singular, irrational act, but by the same act they are rediscovered in an experience of *grace* (DR, 126–28). Accordingly, Deleuze suggests the Nietzschean *dancing* rather than the Kierkegaardian leap as the proper movement of thought and creativity – a constant variation open to singular events (DR, 19–20).

For our present purposes, the most important feature of the third synthesis in *Difference and Repetition* is the notion of an *open whole in variation*. Namely, for Deleuze, the nature of the future is to concern the whole of time while remaining open to endless repetition and variation. I argue that this theme of openness to singularities and variation will be taken up again in *A Thousand Plateaus* in the notion of *machinicity*. This is also for Deleuze the essence of the work of art, or of any singular creation for that matter: a singularity that expresses a process of variation (cf. DR, 7–8, 252). Indeed, Deleuze seeks to bring together the two senses of 'aesthetics' as the Kantian conditions of sensation and in the more common sense of the study of art. Next, we will discuss Deleuze's conception of aesthetics, which will clarify Deleuze's theory of perception and sensation.

empirical being; thinking happens to us and in us, but we can only experience it passively as an external affection. Consequently, the Kantian I becomes only a correlate of our empirical, passive self. By the *fracture* of the I, Deleuze means this externality and separation of the thinking, active I from the self, while the division or scattering of the self refers to its being internal to time.

3.5 Intensive Aesthetics: the constitution of space-time and of desire

Deleuze's theory of passive syntheses is also an attempt to create a general *aesthetics* as a theory of sensation. He thus wants to reverse the Kantian split of aesthetics into two halves: intuitions of space and time as the conditions of objective sensation ('Transcendental Aesthetics', the sensuous basis of knowledge); the faculty of pleasure and pain as the subjective basis of the experience of beauty ('Analytic of Aesthetic Judgment', the basis of aesthetics as the study of art) (cf. DR, 94, 130). Deleuze claims that spatio-temporal intuition and affective sensation (feeling of pleasure or pain) stem from a common, sensual root.

In *Difference and Repetition*, Deleuze develops his account of the role of pleasure mainly in relation to Freud's notion of *the pleasure principle*. For Freud, pleasure-seeking is a principle governing and accounting for psychic activities, although the *death instinct* marks the finitude of the pleasure principle and constitutes a kind of transcendental limit with regard to it (PSM, 96–98). By contrast, Deleuze argues that pleasure is merely a side-effect of more profound passive syntheses (DR, 27). Indeed, according to him, instead of seeking pleasure, passive syntheses seek to deepen or to enrich (*approfondir*) themselves in second-degree syntheses involving a virtual object (DR, 143–44).

If pleasure is not the goal of all life, what is its role then? How can pleasure be so intricately linked to many activities that seem beneficial for the individual and the species? For instance, quenching one's thirst is pleasurable and it is also vitally important. According to Deleuze, pleasure is the 'emotion [*émoi*] of a replenishing contemplation that contracts in itself the cases of relaxation *and* contraction' (DR, 102). Contemplation produces an image of itself: pleasure. This means that all synthetic processes in some way monitor themselves via images that make them pleasurable (or painful). In a very Spinozan manner, the feeling of pleasure ('idea' in

Spinoza's parlance) is thus intricately associated with a particular passive synthesis. Yet, Deleuze claims that the feeling of pleasure differs in kind from the passive synthesis which produces it and does not interact with it. In brief, pleasure cannot be the intrinsic goal of passive syntheses, since it is not produced by them but simply associated with their completion as a psychic image.

Furthermore, according to Deleuze, contemplation is necessarily directed outwards, i.e. at the objects of contemplation, not at the operation of contemplation itself, which Deleuze claims would be impossible. Thus, we always contemplate something external, but by so doing we are filled with a pleasurable image of ourselves, i.e. image or feeling produced by our constitutive passive syntheses (DR, 102).

But if passive syntheses are everywhere and are pleasurable by default, how is pain brought into the world? For Deleuze, the passive syntheses as such do not produce pain but *fatigue*. Namely, 'fatigue marks the moment when the soul can no longer contract what it contemplates, the moment when contemplation and contraction come apart [*se défont*]' (DR, 105). However, from the point of view of passive synthesis, fatigue is in fact a kind of fulfilment or satiety of the contemplation, and consequently not a negative determination of need as lack, i.e. not being able to carry out a desired action. For Deleuze, it is only from the point of view of active syntheses that need appears from this negative perspective.

Furthermore, the analysis of the third synthesis in *Difference and Repetition* also indicates certain aspects of Deleuze and Guattari's later theories of *desire*. In brief, here Deleuze already conceives the object of desire as being beyond pleasure but also beyond need (DR, 140–41; cf. MP, 197). By contrast, at this stage Deleuze defines desire as a 'questioning and problematising force' (DR, 140–41). Moreover, from a psychic point of view on the third synthesis, Deleuze also discusses the 'desexualisation' of the Freudian death instinct in relation to thought, experience and action (cf. DR, 147–48). This broadly means that the psychic and unconscious

nature of death is not characterised by brute materiality (as in Freud), but by metamorphosis and openness to constant variation. In *The Logic of Sense*, this desexualisation is deployed as the impassibility of the surface of incorporeal events, while in *Anti-Oedipus* it defines the neutrality and sterility of the body without organs as the surface of inscription for the desiring machines. However, it is only in *A Thousand Plateaus* that Deleuze and Guattari break – or significantly loosen – the ties of desire to the psychoanalytic binary scheme of sexuality and eroticism. This can be seen first of all in the idea of the multiplication of sexualities (MP, 341–42); secondly, the distance from the psychoanalytic approach to desire is manifest in the machinic characterisations of desire as 'anorganic', 'non-figurative' (MP, 339). Thus, in *A Thousand Plateaus* Deleuze and Guattari finally define desire by its machinic and assembled character:

> Desire has nothing to do with a natural or spontaneous determination; desire exists only as assembling, assembled, machined [*agençant, agencé, machiné*] (MP, 497/399, transl. modified).

> If pleasure is not the norm of desire, this is not by virtue of a lack that would be impossible to fill but, on the contrary, by virtue of its positivity, i.e. by virtue of the plane of consistency which it traces in the course of its process (MP, 197/157, transl. modified).

According to Deleuze and Guattari, desire is deployed or unfolds in an assemblage. Furthermore, as we have seen in Subsection 2.9.3, within an assemblage, abstract machines constitute transformative operations which trace the plane of consistency (cf. MP, 204).

All in all, Deleuze seeks to analyse the nature of sensual receptivity in terms of passive syntheses of contemplation and contraction, and as accompanied by the emergence of local selves. Indeed, Deleuze assimilates the local selves to *contracting contemplations* discussed above (DR, 107, 155). These basic operations account for

the reception and reproduction of sensations, as well as for the pleasure associated with them (DR, 139).

I argue that for Deleuze, this 'mental' life of all dynamic processes is not mysticism or downright panpsychism, but rather the key object of his philosophical approach which he calls 'transcendental empiricism'. This means that the transcendental principles guiding phenomena must be found intrinsically in empirical phenomena themselves, not in some separate (representational) dimension. Deleuze evokes the *eye* as an example of a local self immanent to material phenomena. According to Deleuze, from the dynamic point of view of passive synthesis, the eye is a 'bound luminous excitation', it is the process, the habit of processing light. Instead of a static organ or object with extended parts and qualities, the eye in this sense becomes a dynamic or affective system in a process that not only enables vision but effectively *sees*, it is a 'seeing self' (*moi voyant*) (DR, 128–29). I argue that here, the eye is defined functionally or affectively as a dynamic system. That is, the eye *is* what it *does*, and this activity consists in receiving and producing affections.

Despite the somewhat cosmic pretensions of his theory of passive syntheses, I argue that Deleuze is still primarily interested in the unconscious with regard to its role in human experience. This duality of the unconscious also explains the manifest discomfort in many commentators' accounts of the theory: on the one hand, Deleuze seems to be proposing something like a dogmatic metaphysical theory, speculating on the intricate workings of nature; on the other hand he seems to operate within a quasi-Kantian, critical (or phenomenological) context studying the conditions of human experience (see e.g. Hughes, 2009; Buchanan, 2008). Indeed, I argue that Deleuze primarily analyses structures of human experience and culture, but as *non*-human. Accordingly, the Deleuzean unconscious is essentially relative to *human* (or anthropomorphic) consciousness, but the unconscious itself is non-human.

Indeed, it is important to note the instantaneously dual nature of the Deleuzean deconstructions of phenomena: for instance, he psychicises natural processes, but

by the same blow he naturalises the human psyche. I proposed above the term *machinism* for such naturalism without reductionism. The machinic perspective requires attaining an inner perspective on phenomena in their dynamic and affective nature; at the same time, we must also apply this same perspective to ourselves. Thus, psychicising nature does not for Deleuze mean personifying or humanising it any more than naturalising humans would mean reducing them to objects of scientific inquiry and observation. Rather, the Deleuzean psychicisation should be understood as an extension of the allegedly human cognitive functions and affectivity to all processes, while conversely his naturalism extends the allegedly natural processes and dynamisms to the human mode of being. As I have already suggested, Deleuze sidesteps the problems of reductionism by invoking varying degrees of complexity, accounting for the differences among related dynamisms.

3.6 Syntheses in *The Logic of Sense* and *Anti-Oedipus*

We saw that in *Difference and Repetition* passive syntheses are deployed in function of time and temporality: as a *habit* in the present, as a *ground* in an immemorial past resonating with the present, and as a *transformational*, future element. I argue that this is also the basic scheme and structure of passive syntheses in *The Logic of Sense* and *Anti-Oedipus*, although the context and function of passive syntheses changes considerably in these works.

I shall first describe the broad outline of this conceptual development in *The Logic of Sense* and *Anti-Oedipus*. *The Logic of Sense* gives the form and the structures of passive synthesis and introduces the idea of *inclusive disjunction*. In *Difference and Repetition*, passive syntheses are deployed in terms of temporality, but in *The Logic of Sense* their structure is articulated in a general manner and the different syntheses are given specific terms – connective, conjunctive and disjunctive. Still, the focus

in *The Logic of Sense* is on the interplay of language, sense, bodily profundity and incorporeal events, largely from a psychoanalytic perspective on the unconscious and sexuality.

On the other hand, in *Anti-Oedipus* the conceptual structure of passive syntheses remains the same as in *The Logic of Sense*, but they are used as tools in the analysis of desire and of the unconscious as immediately involving a social and historical context, as libidinal investments in the sociohistorical realm. Furthermore, the point of view of *machinicity* is introduced: habits and contractions of the first synthesis are now described in terms of the connections of *desiring machines*. However, the most important change here is the central role given to the *organless body* or 'body without organs' (*le corps sans organes*) as the surface of inscription of desiring processes. It is the encounter of the body without organs and the desiring machines that makes apparent the disparate character of the machines. That is, it is as if in psychic and social systems the parts or elements (organs, desiring-machines) are clinging to a surface (the body without organs), which is at once the condition of their consistent and productive functioning, but also hostile or repellent to them, because they impose restrictions and limitations on its functioning – organs imprison the body without organs as it were. Deleuze and Guattari use this tension between the desiring machines and the body without organs to analyse the constitutive disequilibrium in schizophrenia, but also in capitalism, where there is a constant disequilibrium between the productive forces (desiring machines) and capital (a body without organs). Again, for Deleuze and Guattari, the link between schizophrenia and capitalism is not a question of metaphors or applying concepts from one domain to another, but discerning *dynamisms* or modes of operation at work in both phenomena.

In both *The Logic of Sense* and *Anti-Oedipus*, the theory and concepts of synthesis are terminologically and formally the same, although in *Anti-Oedipus*, the syntheses are linked explicitly to *desire*, while in *The Logic of Sense*, they are framed

within the context of the genesis or emergence of (linguistic) *sense*. Nevertheless, in *The Logic of Sense*, syntheses account for the communication of series of events, which are accompanied by 'sensual' effects (effects in the realm of sense or meaning). The communication of series of events takes place on a kind of metaphysical, intensive *surface*, facing the material depths of bodies and the linguistic realm or 'plane' of sense, and providing a site for their communication. (LS, 14, 30, 37, 168)

In *Anti-Oedipus*, this metaphysical surface is identified as the *body without organs*. The series or processes that enter into communication are predominantly divergent. This is why their inscription, registration or recording on the intensive surface appears as *disjunctions* or as *disjunctive synthesis*, expressing intrinsic tensions. In both *The Logic of Sense* and *Anti-Oedipus*, the dimension of disjunctive synthesis is expressed as a network of heterogeneous elements and of asymmetric relations between them. However, out of this nonsense or 'chaosmos' of divergent series also arise strands of coherence and convergence, via the *conjunctive synthesis*. This is also where Deleuze and Guattari in *Anti-Oedipus* place the emergence of a tentative form of subjectivity. That is, in the conjunctive synthesis a zone of intensity on the body without organs is identified with the whole individual or processes of individuation – a single strand is isolated from the stream of experience: 'that's it, that's me!'

But where do the names for the three passive syntheses come from? Deleuze's sources are complex, but I argue that Kant is his main source of inspiration for the concept of synthesis. As both Villani and Hughes have pointed out, Deleuze bases his tripartite structure on the three moments of synthesis of knowledge which Kant presents in the first edition of *The Critique of Pure Reason*: apprehension, reproduction and recognition (Villani, 2003, 318; Hughes, 2009, 93–95; cf. DR, 176). As we already noted earlier in Section 3.1, Kant discovered the passive basis of the syntheses that Deleuze analyses, but could not integrate it into his account

of synthesis and consciousness, as these were for him essentially expressions of the activity of the subject.

However, in *The Logic of Sense*, Deleuze in fact refers in this context rather to Kant's transcendental ideas (the Self, the World and God) and the propositional forms and syllogisms Kant uses as their basis. Similarly to Kant's principle of the continuous unity of the conscious subject, Deleuze identifies the idea of the self as a guarantee of the *connection* of series. Second, the idea of the world corresponds to the convergence of different series and their *conjunction* (LS, 205).

We must first note that in these inspirations and appropriations of Kant's philosophy, Deleuze is deeply critical concerning the use Kant makes of these conceptual apparatuses. Thus, here more than ever, Deleuze attempts to isolate certain conceptual structures for other purposes than in the original context.[5] One should also note that Deleuze already modifies the Kantian solution at the formal level by going to the Stoic roots of the syllogisms. Namely, Kant based the idea of the *self* on the categorical syllogism (based on subject–object predication) and the idea of the *world* on the hypothetical syllogism (based on implication). In fact, in the Stoic context and notably in Cicero's writings, *conexo* is the Latin word usually rendered as 'proposition', which Deleuze interprets as a connection of *events*, rather than as a linguistic nexus of verbs or predicates. Indeed, Deleuze argues that the infinitives of verbs should be understood as pure events: 'to see' or 'seeing', 'to cut', 'being cut', or 'cutting' etc. and in the case of predicates, e.g. 'to redden' or 'reddening' instead of 'x is red' (MP, 14–15).

We can see that even if Deleuze replaces the Kantian predicative relation of the conscious subject to its objects (predicates) by the connection of events, he still presents the grounds of these syntheses as Kantian: for Kant, the idea of the self is the regulatory guarantee of the unity of experience, and the connective synthesis has

[5] According to Fredrika Spindler, Deleuze's method of appropriating other philosophers' concepts essentially involves the two moments of (1) understanding the problems which the concept responds to and (2) reformulating the concept as a response to Deleuze's own, related theoretical problems (Spindler, 2013, 11–12).

the same role. Furthermore, Deleuze replaces the Kantian hypothetical syllogism with the *convergence* effected by the conjunctive synthesis, however with the same function of projecting unity into the cosmological series. Third, the Kantian idea of God as the ideal of complete determination – *ens omni modo determinatum* – is based on the disjunctive syllogism, as we also find with Deleuze. However, here Deleuze argues against Kant for an *inclusive* use of disjunction. In the Kantian exclusive sense, the disjunctive syllogism is the ground of determination, where a thing is determined negatively by everything it is not, based on an infinite series of disjunctions. According to Deleuze, the goal of the Kantian account is essentially the grounding of our representation, as its (regulative) transcendental condition. The ideas of the self, the world and God represent the requirements of representation: in order to be representable – a possible object of thought and knowledge – our experience must be unified (the self as the continuous unity of consciousness), coherent (the world as the convergence of series) and perfectly determinable (God as complete determination). (LS, 205–06)

However, Deleuze insists on an inclusive and affirmative interpretation of disjunction. He further claims that the classical image of thought taken up by Kant and its requirements simply ignore an important part of reality by subjecting it to the conditions of representability. In a Nietzschean fashion, Deleuze's upheaval of the classical image of thought starts with the death of God, or rather as the destitution of God: determination and reality are not based on exclusive disjunction or the law of the excluded middle. However, more profoundly, according to Deleuze and Guattari, desire is inscribed as inclusive disjunctions, as multiple bipolar tensions. Instead of being an exclusive determination, the disjunctive synthesis is an inclusive *affirmation* of the disjunction and of the divergence it entails. In a helpful analogy, Deleuze and Guattari refer to the inclusive disjunction and the distance between its terms as the two ends of a single stick: the ends are in some sense one and affirm one another – they depend on one another – but they are nonetheless separated by

a positive distance (AO, 90–91). Furthermore, these intensive distances are always *asymmetrical*, so that it makes a difference at which end one's perspective is placed. We can recall Nietzsche's example of health and sickness as the two poles of a single distance, affirming each other asymmetrically (for instance in *Human, All Too Human*, Nietzsche, 1988, 522). Later in *A Thousand Plateaus*, the concept of *becoming* also expresses this inclusive disjunction: a woman-becoming (*devenir-femme*) entails entering a distance or tension, characterised by a variation of male and female traits. 'Male' and 'female' are like the virtual extremes or poles of the tension which are never actual as pure extremes, except as the terms of the opposition man–woman, where however the inclusive disjunction or point of view of becoming is precisely replaced by the exclusive one.[6]

Just as with Nietzsche, the death of God also entails for Deleuze the deaths of the world and of the self. In the ensuing affirmation of difference, the exclusive, determining synthesis (divine judgment) is replaced by the affirmation of the disjunctions and divergence, and consequently the world becomes the open system of these divergent series, *chaosmos* instead of a converging cosmos, and the constituted self of the connective synthesis becomes an aleatory point, passing through the series, the subject only appearing as a residue of this process. (LS, 205–06)

Thus, in the *The Logic of Sense*, Deleuze uses the concept of synthesis to portray the different levels of complexity of series, formally similar to the temporal syntheses of *Difference and Repetition*: (1) connection constitutes a linear series of elements, (2) conjunction establishes a communication between two series and (3) disjunction expresses the complex ramification and divergence of series. In *Anti-Oedipus*, on the other hand, not only are these syntheses of sense analysed in terms of the operation of desire, but desire is further depicted as an inherently socio-political dynamism.

[6] Tomlinson and Habberjam convincingly argue for reversing the order of the words in the translation of *devenir-femme* (instead of 'becoming-woman', the established translation), due to a common manner of constructing compound nouns in French. Thus, 'woman' indicates rather the character of the becoming rather than its terminal point or goal (Tomlinson and Habberjam, 2007, xiii). Similarly, *image-mouvement* is rendered 'movement-image' in English.

Deleuze and Guattari develop the psychic and social perspectives in parallel and adopt a new socio-economic scheme from Marx's *Grundrisse* for the syntheses of desire: they associate (i) the connective synthesis with economic production, (ii) the disjunctive synthesis with inscription or registration (Marx's distribution and exchange) and (iii) the conjunctive synthesis with consumption (cf. Lapoujade, 2014, 174). For Marx, in production, materials are humanly appropriated through labour. In distribution and exchange, the products are as if socialised and inscribed or registered into the social sphere of an economy. Finally, in consumption, the products become 'singular', meaning that they fall out of the general social sphere of distribution and exchange. Thus, consumption marks the end of the life cycle of a product, but it also serves as the fuel of other productive processes. (Marx, 2006, 21–35) In fact, Deleuze and Guattari identify it as a distinctive feature of capitalism that it brings even luxuries and excessive consumption into the economic system as investments. Thus, capitalism liberates production and consumption from their old norms but also operates a conjunction of all decoded and deterritorialised flows.[7] (AO, 165–66)

This Marxian background of *Anti-Oedipus* explains the change in the order of presentation of the syntheses (the conjunctive and disjunctive syntheses swap places). However, I argue that this order is not essential, since just as Marx himself, Deleuze and Guattari also emphasise the systemic coexistence of the moments or syntheses of production. That is, the syntheses simply pinpoint distinct factors of the functioning of a productive system, and each factor thus presupposes the existence of the other factors. Nevertheless, as I have mentioned, the body without organs as the

[7] Deleuze and Guattari's assimilation of conjunction and consumption requires some clarification. Conjunction and consumption have two main characteristics, marking (1) the emergence of a subject and (2) the end point or closure, the 'consummation', of a productive process. More importantly, I argue that the particular nature of this synthesis in different types of society (primitive, despotic, capitalist) depends essentially on its relation to *coding*. In the primitive case, consumption escapes coding as excess or waste, while in the despotic case, consumption is associated with the overcoding body of the despot and the elite, with their life of abundance and surplus enjoyment. In the capitalist case, however, consumption becomes a matter of capital itself, implying the conjunction of all decoded flows of desire. Just as capital appears as the motor of the economy and as the source of its wealth, it also appears as the consumer of the economy's resources.

surface of inscription for productive desiring flows furnishes a general context for the desiring processes and syntheses. This change in the logic of syntheses introduces a more systemic perspective on the syntheses of desire. As I will argue below, this systemic perspective becomes ever more important in *A Thousand Plateaus*, where Deleuze and Guattari use the concept of machine to analyse the communication and interplay of divergent processes within heterogeneous systems, thus downplaying the constitutive and generative role of syntheses in the earlier works.

3.7 Syntheses in *A Thousand Plateaus*

In Section 3.2, I pointed out the necessarily intensive character of passive syntheses: intensity provides the context or mode of passive syntheses in the form of an intensive field of individuation. Passive syntheses thus showcase the positive, productive role of intensity. I have argued that this positive role is a kind of *operationalism*, which, however, is passive. As we have seen, according to Deleuze's definition, passivity means independence from the mediation of consciousness and its structures. Furthermore, all active syntheses are based on passive syntheses, but cover them up as well as the intensive differences at their source.

More importantly however, I argue that passive syntheses are the early form of Deleuzean *machinicity* or machinism. Already in *Difference and Repetition*, Deleuze refers to the passive synthesis of habit as 'a contracting machine' (DR, 107/78). However, the development of this machinic syntheticity is complex, as first in *Anti-Oedipus*, the syntheses are assimilated with the operations of the desiring-machines on the body without organs. I argue that this is the accomplishment of the line of development initiated in *Difference and Repetition* with the three syntheses of time. However, afterwards in *A Thousand Plateaus* the syntheses do also have a role, but they are subordinated to the *multiplicities* which provide contexts for their operations (DRF, 289). This is first of all a change of focus: if *Anti-Oedipus*

focuses on two domains or 'plateaus', the psyche and the social realm (the *socius*), *A Thousand Plateaus* seeks to multiply the perspectives (hence the title 'A Thousand Plateaus'). The first consequence of this multiplication of perspectives is that in *A Thousand Plateaus*, the constitutive role of passive syntheses is relativised and at first always limited to a particular context – a particular plateau or multiplicity.

As a result of this decentring and dispersing of perspectives, in *A Thousand Plateaus* the role of *assemblages* is underlined. Deleuze and Guattari define the assemblage as a creative modification and rearrangement or machination of existing material – bodies and their affects – as well as of expressive elements – enunciations. I described the nature of assemblages in detail above in Section 2.8. Although traces of passive syntheses can be seen in the machinic operations, the relevant change here is that machinic assembling takes the place of constitutive syntheses. Furthermore I argue that in *A Thousand Plateaus*, the constitutive function of passive syntheses is assimilated to *stratification* (see Section 2.7).

As Lapoujade points out, passive syntheses do show up in different guises in *A Thousand Plateaus*, arguably in the contexts of the *ritornello* or refrain (*ritournelle*) and of *lines* (Lapoujade, 2014, 91–92, fn49; cf. MP, 248). Indeed, the role of passive syntheses is relativised to merely operating within a given multiplicity, instead of having a central, constitutive role. On the other hand, the liberating or destructuring – machinic – dimension of the syntheses is emphasised. In addition to the examples mentioned by Lapoujade, I would suggest that synthetic structures are also present in the form of *stratification* or double articulation of content and expression. As we have seen, the articulation of content produces an ordering of a material (first synthesis, connection), while the articulation of expression organises the material into a relatively invariant structure (second synthesis, conjunction). Still, this underlines the marginal role of synthesis in *A Thousand Plateaus*, as stratification is presented as an imprisoning process, which encodes a molecular material and organises it into substances, into a *milieu*. Stratification is presented only as a

double articulation of content and expression, thus lacking the third, open dimension of passive syntheses. I argue that this open dimension is constituted by the plane of consistency (MP, 55).

Here it is important to note that the theme of coordination, conjunction or communication of series of the second synthesis is in this context expressed as the *functional* nature of double articulation (see Subsection 2.7.1). That is, content and expression are the two terms or variables of a function, of which the first constitutes a linear series or sequence and the other establishes another series as a function of the first one. However, the third synthesis, or the fleeing and transformative dimension of passive syntheses seems to be missing from this account. Indeed, Deleuze and Guattari describe strata as 'phenomena of thickening' of the plane of consistency or the 'body of the Earth' (MP, 627). The fleeing tendencies – 'free intensities' and 'nomad singularities' – belong to the virtual context or surface on which stratification happens – the plane of consistency – whence stratification draws its materials and its force (MP, 54). Thus, in stratification the first two moments of passive synthesis are separated from the third moment. In fact, Deleuze and Guattari refer to the double articulation as a 'double bind', which is precisely a kind of unity in the guise of a duality. Thus, the stratic order is in sharp contrast with more chaotic tendencies it covers up and limits (cf. MP, 54).

A stratum can be subject to destratification, where the stratified molecular flows and expressive traits are liberated from the content and expression of the stratum, and its respective forms and substances. Thus, destratification is also one of the fleeing processes tending towards the plane of consistency. However, the main context for reaching the plane of consistency seems to be an *assemblage*, which always operates between a stratum and the plane of consistency, and is consequently more prone to deterritorialisation or transformation (MP, 54).

I argue that the basic elements for Deleuze and Guattari in *A Thousand Plateaus* are heterogeneous or disparate flows within a multiplicity, which are subject to differ-

ent operations, e.g. affirmation, limitation or organisation and coordination of these flows. Deleuze and Guattari define the *machinic* precisely as a bringing together or communication of such disparate flows or series. However, they also refer to this machinic communication as a *synthesis* of heterogeneous elements or as a *synthesis of disparates* (MP, 408, 424–26). Thus, they expressly take up the link between passive synthesis and machinicity presented in *Anti-Oedipus*. However, if in *Anti-Oedipus* this link manifests as the connective synthesis operated by the desiring machines, in *A Thousand Plateaus* machinicity refers to assemblages and their heterogeneous elements, susceptible to variation and transformation. Indeed, there is no global unity in this synthesis, but only consistency between heterogeneous elements and materials (MP, 424). Ultimately, I argue that for Deleuze and Guattari, machinicity consists of the liberated flows of the plane of consistency and its operational side, the abstract machine, which makes these flows communicate.[8]

While in *Anti-Oedipus* Deleuze and Guattari focus their analysis on the productive nature of desire and its dynamic structure, in *A Thousand Plateaus* they take this productive background more as a given and they study instead how creative, subversive, transformative or revolutionary tendencies tap onto these productive processes in a multitude of contexts. In *Anti-Oedipus*, the immediate dynamics of desire are presented as intrinsically productive, and in their productivity they are also subversive and revolutionary. By contrast, *A Thousand Plateaus* analyses desire as fundamentally ambivalent, always apt to endorse the conservative as well as the subversive tendencies. Indeed, I argue that this shift is a logical consequence of their doctrine of *immanence*: the rigid and fleeing tendencies are not *opposed*

[8] In fact, in a sense the desiring machines of *Anti-Oedipus* and the abstract machines of *A Thousand Plateaus* have almost directly opposed roles. In *Anti-Oedipus*, the desiring machines manifest an organising force, which is decoded, dismembered and repelled by the body without organs, their surface of inscription. Furthermore, Deleuze claims that in *A Thousand Plateaus*, desiring machines are replaced by *assemblages* (DRF, 163). Assemblages are characterised as *machinic*, but this machinicity is a deterritorialising force, affecting the assemblage but distinct from it. Thus, in *A Thousand Plateaus* machinicity is a creative and transformative force rather than the productive and constitutive force of *Anti-Oedipus* (MP, 411).

to each other but represent different degrees of the same continuum – there is no opposition between them, only *distance* in the Nietzschean sense.

I argue that the important conceptual shift in the concept of machinicity concerns *heterogeneity*. In *Anti-Oedipus*, disparity and heterogeneity result from the inscription of the machinic desiring production on to the body without organs. In *A Thousand Plateaus*, the plane of consistency constitutes a field of heterogeneity, but it is also machinic in itself – it is immanently occupied by abstract machines. Also, assemblages derive their machinicity precisely from their tending towards the plane of consistency. I would argue that the plane of consistency is not anti-productive like the body without organs in *Anti-Oedipus*, but rather *anti-organic*. For Deleuze and Guattari, the determining aspect of any activity is the mode of connection it involves: communication between disparates (plane of consistency, destratification, deterritorialisation) instead of a homogeneous organisation (plane of organisation, stratification, (re)territorialisation).

3.8 Ritornellos and synthesisers

As I mentioned above, in *A Thousand Plateaus* the *ritornello* or refrain (*ritournelle*) is presented as a kind of passive synthesis, with a predominantly musical expression as a musical element or as a bird song. However, the ritornello acquires just as 'cosmic' a role as the passive syntheses do in *Difference and Repetition*:

> The ritornello is a prism, a crystal of space-time. It acts upon what surrounds it, sound or light, in order to draw from it varied vibrations, decompositions, projections and transformations. The ritornello also has a catalytic function: not only to augment the speed of exchanges and reactions in what surrounds it, but to ensure the indirect interactions between elements deprived of an allegedly natural affinity, and thus forming

> organised masses. The ritornello would thus be of the type crystal or protein. (MP, 430)

Deleuze and Guattari go on to state that 'the ritornello produces [*fabrique*] time' and that it is 'the a priori form of time which each time produces different times' (MP, 431). Thus, the connection to the temporal syntheses in *Difference and Repetition* is also evident. However, if in *Difference and Repetition* the genesis of perception and experience dominates the discussion of passive syntheses, here the temporal syntheses of the ritornello are more intrinsically attached to concrete processes, as the development of a crystal from a germ, the ritornello signifying in general a catalytic process.

In order to discern the guiding thread from syntheses via ritornellos to machines and technics, we must take a quick look at Deleuze and Guattari's territorial analysis of the history of music from the eighteenth to the twentieth century, which I argue is a variation on the synthetic triad in *Difference and Repetition*. First, the classical approach characteristically imposes forms and codes onto chaos, producing substances and *milieus* (MP, 416–17). This produces a single series of form, expressed as a *ritornello* or refrain at a single level, distinguishing itself as a *creation* imposing a form on an undifferentiated, chaotic matter. On the other hand, according to Deleuze and Guattari, the romantic movement in music is deployed within a territory, but this territory refers to a primary 'earth', a kind of origin and *ground*, from which the territoriality draws its force. This time, the form of music takes the form of a territorial assemblage, which develops continuously a dynamic matter in continuous variation (MP, 418–19). The territorial nature of romantic music can be easily seen in its local, national inspiration, in contrast with the universalist, classical perspective. Moreover, in romantic music the development and variation of form is dominant in contrast to the more formal structure of classical music. Finally, Deleuze and Guattari characterise modern music in terms of a cosmicity, open to molecular, universal processes and intensities (MP, 422). Instead of the univer-

salist classical form imposed on chaotic matter and the romantic territorial form which develops a matter in continuous variation in relation to a territorial assemblage, Deleuze and Guattari claim that modern cosmic art manifests as a capturing and 'making perceptible' of molecular forces proper to a material (*matériau*). The clearest manifestation of such an approach is the arrival of electronic elements in music, which introduce a completely new world of sound. 'That crystalline sound [...] I liked the sound of broken glass falling from the void into creation.'[9] However, Deleuze and Guattari refer for instance to the music of Edgard Varèse as involving such a capturing of molecular forces in a sonic material produced by traditional musical instruments (MP, 425).

The third stage in Deleuze and Guattari's history of music is epitomised by the *synthesiser*, which precisely harnesses and modulates a physical force – electricity – by producing sonorous variation, which it then modifies via its heterogeneous assemblage of modules. Thus, the functioning of the synthesiser is based on an openness towards the molecular variations of the electric material, finding and affecting the forces of the material, 'capturing the cosmic forces of a deterritorialised material' (MP, 424–25). It is also important that the functioning of the synthesiser is thus immanent and literally 'univocal' – it produces a single output immediately on the basis of a heterogeneous input.

Despite its minor role in *A Thousand Plateaus*, the theme of syntheticity thus nevertheless provides a fruitful guiding thread linking machinicity to technicity and technology. I argue that these themes are brought together concretely in the synthesiser as a heterogeneous assemblage of material modules and flows. Deleuze and Guattari oppose the synthesiser as the paradigmatic assemblage of the abstract machine to Kantian synthetic *a priori* judgements (MP, 424). If the goal of a cognitive synthesis is to combine and unify a manifold of experience on the basis of a transcendental ground, by contrast, machinic synthesising seeks to modulate hetero-

[9] Jim Morrison of The Doors on the sounds created by a Moog synthesiser (Manzarek, 1999, 256).

geneous processes in order to produce something new, without quenching the initial processes.

3.9 From syntheses to machines and technology

Deleuze and Guattari describe the ritornello as being operated by an *abstract machine* (MP, 431–33). Machinicity is their conceptual solution for conveying and preserving the heterogeneous nature of the passive syntheses: the result of passive syntheses is not necessarily the synthesis of an organised whole, but a heterogeneous assemblage. This can be seen in the development from *Anti-Oedipus* to *A Thousand Plateaus*, where at first in *Anti-Oedipus*, the passive syntheses of the unconscious are based on the connections of desiring machines, but later in *A Thousand Plateaus*, the abstract machine is defined as 'a set of cutting edges that insert themselves into the assemblage undergoing deterritorialisation, and draw variations and mutations of it' (MP, 411/333).[10] In other words, the machine is an interacting group of heterogeneous processes of transformation. Deleuze and Guattari's concept of machine resembles an organising principle, but their point is precisely that the machine lacks all the usual characteristics of a properly organising principle: (1) an abstract machine does not produce a well-defined or demarcated whole, it is primarily directed outwards, towards modification and change; (2) it has no stable internal structure among its parts (it is not an organism), but it is primarily defined by its affects; (3) it is heterogeneous, linking together disparate elements. Thus, in *A Thousand Plateaus*, the abstract machine concerns the whole of an assemblage from the point of view of its transformation, while in *Anti-Oedipus*, desiring machines had a constitutive role as the operators of connective syntheses.

In Deleuze and Guattari's machinic conception of music and art, the *artisan* becomes the modern figure of the artist (MP, 426). Moreover, synthesising is no

[10] '[...] une machine est comme un ensemble de pointes qui s'insèrent dans l'agencement en voie de déterritorialisation, pour en tracer les variations et mutations' (MP, 411).

longer a constitutive synthesis but it is instead assimilated with the third stage of the synthesis as an open, deterritorialised system. In this manner, the third stage of the synthesis is in *A Thousand Plateaus* portrayed as a deterritorialised, machinic assemblage. The artisan is not even assimilated to a residual subject of a synthesis, but becomes an operator of the assemblage – herself a *synthesiser*. Thus, the technical figure of the artisan emerges from the history of music, as the machinic, deterritorialised dimension of the synthesis is emphasised over the two constitutive dimensions. But what exactly do Deleuze and Guattari mean by 'an artisan'? In order to understand this, the figure of the artisan must also undergo a similar genealogy or operation of deterritorialisation from the point of view of technology as we have seen with the concept of synthesis. In *A Thousand Plateaus*, Deleuze and Guattari formulate such a new figure of the artisan in the 'Treatise on Nomadology', which I will discuss in Part II.

Thus we have traced the development of Deleuzean machinicity from the temporal passive syntheses to the synthesising of a heterogeneous assemblage, based on the abstract machine. This link is vital if we wish to understand the development of Deleuze's theory of intensity from its first formulation in *Difference and Repetition* to its full deployment in the machinicity of *A Thousand Plateaus*. In tracing this lineage, we also got a glimpse of Deleuze and Guattari's approach to technicity, which circles around the question of the nature of machines. We saw that machines are essentially operations which happen on the plane of consistency and are developed as heterogeneous assemblages.

But what is the purport of the concept of heterogeneous, creative machinicity for our understanding of 'normal', technical machines? It would seem that at least some of these machines are chiefly mechanic, deterministic apparatuses designed for a specific purpose and incapable of adaptation and creativity. Furthermore, Deleuze and Guattari argue that the nature of technical machines is defined and even determined by the social assemblage they are in – by the 'social machine'. Thus,

machines are not always heterogeneous and transformative but are also capable of forming a relatively closed, homogeneous system – an organism in Deleuze and Guattari's sense. However, we have already seen that this deterministic mechanism was not the essential nature of machinicity. Still, Deleuze and Guattari argue that there is no simple opposition between the different types of machinicity, but that they interact on the same, immanent field or plane of being. Thus, the differences among machinic tendencies cannot be reduced to mutually exclusive abstract principles nor yet to a diametrical opposition of forces. For Deleuze and Guattari, machinicity is always deployed as complex systems of autonomous, positive processes or forces, which, however, are capable of communicating and interacting with one another.

Part II

Technics

Introduction to part II

So far, I have discussed the general features of intensity as the intrinsic nature of materiality in Deleuze's work. Furthermore, we have seen that this general structure of intensity also defines the manner in which phenomena are immediately known or encountered. Namely, the intensive side of phenomena is precisely the one that is encountered and the rest of phenomena – their extensive side – is essentially a matter of conscious perception or experience, where the object of experience is associated with a concept, recognised and represented.

So, intensity characterises immediate materiality in general, but what is the relevance of this immediate materiality, given that it defies conceptual determinations? Furthermore, while it would seem plausible that natural processes are independent of human consciousness, they nevertheless do manifest positive and distinct principles that can be discovered. According to Deleuze, these dynamic principles are *virtual* insofar as they are thought and *intensive* insofar as they are sensed or experienced. As virtual, the dynamic principles are conceived in terms of the relations between ideal elements. As intensive, the dynamisms are lived or reacted to as concrete processes and operations. Indeed, we saw that intensity was the nature of *affectivity* – what a body is capable of. Accordingly, the nature of intensity cannot be properly understood simply in relation to perception, but it also characterises *doing*.

I argue that this active or operational nature of intensity entails its envelopment in an ensemble, a group of elements, or *multiplicity*. Indeed, we have already seen that intensity characterises *heterogeneous wholes*, which consist of parts or elements

that differ in kind but are connected by a process. Furthermore, as we saw, this dynamic heterogeneity is also the definition of *machinicity*. Consequently, I argue that intensity is the essential nature of machinicity and machinicity in turn is the mode of deployment of intensity – the creation and assembling of new intensive, heterogeneous wholes. We can easily see the intuitively technical nature of this intensive machinisation and its importance in technical creations. What else is a technical invention but an operative assembling of heterogeneous elements? However, I argue that the creativity and transformativity of this technical assembling lie in the immediate encounters with materiality – its intensive dimension. Technical creativity means following the intensive variations of matter, and this process creates a heterogeneous assemblage. Furthermore, according to Deleuze and Guattari, these assemblages always display constraining features, which in fact define the nature and role of the technical elements within an assemblage. I will analyse the tension between the social determination of technology and technical creativity in Chapter 6.

In this part, I will defend four main hypotheses concerning the materiality of knowledge and its intensive dimension. (1) The materiality of technology is not merely a vague and undetermined basis but this materiality possesses a definite structure which manifests as the concrete potentials and singularities of the materials used – the intensive dimension of phenomena. (2) Scientific theories themselves have a material and pragmatic side to them, which is characterised by *operations* and also explains the importance of technology for the progress of science. (3) Technics is always part of a social assemblage, which defines the nature of technics in each particular situation. (4) Technics also has a piloting, transformational role, fostering creativity but potentially also violence and destruction.

Chapter 4

Philosophy of technology and Deleuze's approach to technicity

From *Anti-Oedipus* (1972) onwards, technological and machinic concepts acquire an important role in Deleuze's philosophy. The influence of Félix Guattari is here decisive, as the technological imagery and concepts are predominant in the works co-authored with him, and he is also often quoted as the source of the machinic metaphors (see Lapoujade, 2014, 133–36; Young et al., 2013, 85–87). However, already at the time of writing *Anti-Oedipus*, Deleuze added a supplementary part to his previously published book on Proust, in which he analyses artistic creation as a machinic phenomenon. Also, he continues to deploy the machinic themes later in his *Cinema* books, describing the material universe as a 'machinic assemblage of movement-images' (C1, 87–88). And as I have shown, many of Deleuze's earlier concepts are seamlessly connected with the Guattari-inspired machine concepts in the two tomes of *Capitalism and Schizophrenia*. Indeed, we saw in Chapter 3 that Deleuze's concept of synthesis was developed further in *Anti-Oedipus* as a function of desiring-machines, and in *A Thousand Plateaus* machinicity acquires the role of the third synthesis as transformation and open variation. Thus, not only does the

notion of machine become an integral element in Deleuze's thought, but it also takes up some of the functions of Deleuze's earlier concepts.

Machinicity is essentially opposed to organic structures. Indeed, it is a near synonym for the *inorganic* and as we have seen, in *A Thousand Plateaus* abstract machines constitute the operative side of bodies without organs. However, by distinguishing the machine from organic structures, Deleuze and Guattari do not subscribe to the opposition between natural and artificial phenomena (see MP, 73, 89, 326–27, 506).

> Artifice is fully part of Nature, since each thing, on the immanent plane of Nature, is defined by the assemblages of motions and affects into which it enters, whether these assemblages are artificial or natural' (SPP, 167/124), transl. modified.

Rather, for Deleuze and Guattari, an organism is essentially a structure which is represented as unified, closed and reproductive. By contrast, a machine is an open, productive system with no essential structure save its current connections among its parts and with its outside. Thus, as we saw in Subsection 2.9.1, a machine is not primarily a *mechanism* – a mechanism is precisely an artificial organism, or more generally, a unified structure guided by a transcendent principle. The distinction natural/artificial does not hold for Deleuzo-Guattarian machines, as this distinction is based on the influence of human activity or its absence. By contrast, Deleuze and Guattari are primarily interested in the mode of being and of operation of heterogeneous systems, not in their description and significance from a predominantly human perspective. In this sense, Deleuze and Guattari also characterise machinicity and the inorganic as inhuman or non-humanist (e.g. C1, 77, 118–19, 239–42; AO, 486).

Artificiality has been defined as 'things that are man-made' or 'things designed for a purpose'. I argue that such definitions raise several problems. For one, human beings affect nature in many ways that require distinct arts and skills, which how-

ever are deemed natural for all other species – acquiring nourishment, building a shelter, protecting oneself, nurturing offspring etc. Furthermore, all natural things can be seen as having a purpose and even plants seem to manifest some intentional behaviour (e.g. turning toward the sun). Nevertheless, I would suggest that the problem does not lie in the definition of artificiality, but with the notion of a division between the human world and the natural world. We should take seriously the proto-naturalistic (and Spinozan) claim that nature is all there is – everything is natural. Artificial things are real, but as complex modifications of nature, not as natural materials moulded by human form and purpose.

But is the status of artefacts just an idle question of perspective, entailing no ontological difference in kind? Accepting the concept of artificiality for the sake of argument would seem warranted and meaningful for instance with regard to energy sources. Is energy natural or artificial? All energy is arguably natural in the sense that it is ultimately extracted from a natural product or process. Nevertheless, the *production* of most energy would seem to be artificial. What does this mean? It means that we have to provoke nature somehow to release the energy. Combustion energy or nuclear energy does not blow in the wind or run in the stream, but it has to be teased out by a kind of chain reaction, resulting in more energy than what the teasing out consumes.

But we need technology in order to make use of wind and water power as well, so all use of energy would seem to entail some degree of artificiality. Indeed, the most common distinction is made between renewable and non-renewable energy sources. Even if this distinction is admitted to be relative (there is no absolutely non-renewable energy), it is absolute for all practical intents – we will not be there to see the renewed oil sources. But this distinction often parallels the untenable natural/artificial distinction with the same moralistic and even archaic overtones. Namely, the promotion of renewable energy sources echoes the classical idea of a natural harmony, while non-renewable energy sources appear as the product of

human hubris leading inevitably to catastrophes. Admittedly, many critics of non-renewable energy fully endorse technological and artificial solutions to the energy problem and do not simply adopt an eco-fascist stance, which sees technology itself as the problem. However, even this progressivist branch of environmentalism would thus seem to adhere to a very traditional idea of energy as a *resource* which one taps into.

By contrast, from Deleuze and Guattari's affective point of view, the Earth with its resources is not a harmonious, 'natural' organism, but a *body without organs* with its characteristic capacities or affects (MP, 53–54, 314). Thus, it can produce and receive specific actions and passions. Furthermore, from this point of view, energy is not essentially a quantitative resource, but constitutive of a certain mode of being. This would be the intensive side of energy, the intrinsic variation of energy as manifested in its affective mode of being. Accordingly, the intensive and affective approach to energy would mean that we ask ourselves what kind of *mode of life* a certain form of energy entails. Quite simply, from the affective point of view, the mode of production and the side effects of exploiting an energy source are intrinsic parts of its mode of being, of its affects. Thus, one must also accept that our mode of life is entwined with a certain level of energy production. However, this energetic conditioning is not a simple truism, but means that energy production and a mode of life are deeply connected. Thus, the affective perspective must be distinguished from both the extensive perspective which treats energy in terms of efficiency as a homogeneous, quantitative matter but also from the qualitative point of view which focuses on the specific 'kind' of energy (wind, hydro, solar, nuclear, fossil etc.). Furthermore, by looking at energy in terms of its affectivity, we can also sidestep the habitual distinction between nature and artefact, which I would argue is at the bottom of many cultural and ideological tensions, including the ones concerning the energy industry.[1]

[1] In 'The Question Concerning Technology' (1977) (*Die Frage nach der Technik*, 2000) Heidegger defines technics or technicity (*Technik*) as 'enframing' (*Gestell*), or as 'the challenging

As we saw earlier, Deleuze and Guattari define the specificity of anthropomorphic technics as *alloplasticism*, that is, modification of the environment (MP, 79). Thus, artefacts are for Deleuze and Guattari mere consequences of the activity of the hand as an *encoding* of the form of content, which produces formed matter or substances. Thus, nature and artefact are defined only in relation to processes of stratification and they are susceptible to processes of deterritorialisation and destratification, which undermine and transform stratified forms and contents.

So, Deleuzean machinicity is opposed both to the organistic and mechanistic modes of thought and it ignores the distinction between the natural and the artificial. An important implication of the openness of machinic assemblages is that they are potentially creative. I argue that the machinic element of technology is the most important point of focus in the Deleuzean philosophy of technology. In accordance with this machinic approach to technology, I will argue that experimentality and creativity are essential characteristics of technology. In this sense, I will question the traditional idea of technology as an instrument or as a means to an end; rather than a means, it is a *medium* in which novel purposes and modes of life can emerge.

I shall develop this machinic approach to technology and technicity under the rubric of 'technics'. This terminological choice will make it easier to bring out the

setting-upon [*Stellen*] through which what we call the real is revealed [*entborgen*] as standing-reserve [*Bestand*]' (Heidegger, 1977, 18–19). Furthermore, he states that 'the revealing that rules in modern technology [*Technik*] is a challenging [*Hearusfordern*], which puts to nature the unreasonable demand that it supply energy that can be extracted and stored as such' (Heidegger, 1977, 14). For Heidegger, technics is a form of letting reality reveal itself, which is a distinctively human mode of being in the world, also characterising artistic, poetic and philosophical creativity. However, modern technics has gone astray by treating reality as a resource or reserve ('standing-reserve', *Bestand*). It is not the harnessing of energy or the modification of nature as such that Heidegger finds problematic, as for instance windmills and traditional cultivation of land do not for him involve the violent extracting of resources characteristic of modern technology. This work shares Heidegger's perspective of analysing technics as a mode of being and of life, in contrast to conceiving of it as a mere instrument. However, his view on technics seems to be limited by a romantic ideal of natural harmony and a very specific, rural mode of life disturbed by modern technics. Furthermore, Heidegger does not acknowledge the socio-economic dimension of the problems he identifies in modern technology. By contrast, Deleuze and Guattari examine this perspective in their analysis of capitalism (see Chapters 6 and 7). I argue that the tension between technical creativity and the social organisation of technics is crucial for an analysis of technics, as it is based on intrinsic distinctions between different forms of technics and thus does not require a wholesale rejection of modern technics.

inherent machinicity of technology and knowledge. To put it briefly, the machinicity of knowledge concerns the material interplay of technology and science, or more simply, the material side of knowledge. Moreover, the dynamic nature of material reality is foremost characterised by affectivity – that is, what a material body can do. As we saw in Part I, the intrinsic variation and structure of this material affectivity is of an intensive nature. I argue that this intensive affectivity is precisely what technology seeks to control and accommodate to its own interests. Accordingly, I further argue that technical knowledge and technology essentially consist of a knowledge of the intensive affects of matter.

Daniel W. Smith has presented the outline of a Deleuzean philosophy of technology or technicity (see Smith, 2018). He develops Deleuzean technical themes in terms of bodily and natural technologies, graphism and a kind of pragmatism of knowledge and science.

According to Smith, technology can first of all be seen as a prosthesis, prolonging and extending our organs. That is, the hammer is a prolongation of the fist, the wheel of our hip, the telescope of our eyes. This idea was first developed in detail by Kapp (2015). Deleuze and Guattari also assign to tools this role of 'prolonging' the hand (MP, 79). However, as Smith notes, our organs themselves are already prostheses and technologies of our body. In this sense, an important function of evolution has been to develop bodily technologies to respond to challenges presented by the environment. In fact, this idea is to some extent similar to Aristotle's account of animal technology in *On the Parts of Animals* (Aristotle, 1983): organs are not simply parts of the organism, but serve a particular purpose as a kind of tool. Indeed, Aristotle notes how animals have different kinds of tools integrated into their bodies: birds' beaks, the beaver's tail, a tortoise's shell etc. The peculiarity of humans is of course that we have no such tools attached to our bodies, except for our hands. Yet in contrast to the bodily tools of other animals, our hands serve no specific function but on the contrary allow us to grab any number of tools

external to us. Smith calls this the despecialisation of the human body. Faithful to his teleological and essentialist scheme, Aristotle interprets the ontological status of organs as subordinate to the goal and essence of the being in question. Thus, man's rationality is not a consequence of having hands, but the opposite: human beings have hands *because* they are rational, allowing them to realise this rationality in a versatile manner.

Empirically minded people may readily dismiss Aristotle's view as utterly speculative; it would seem clear that humans had hands prior to the development of anything we might label rationality. Thus, our manuality would *de facto* seem to be a condition of rationality rather than the other way round. However, I argue that this pseudo-empirical observation is guilty of a hindsight fallacy. Indeed, even if we do not agree with Aristotle that rationality precedes manuality, we should not simply conclude the apparent opposite of his view either. Instead, we can see organs' statuses as both contingent and still relevant for the actions and operations they are involved in. Namely, the central importance of hands for human development would seem to consist in guiding a whole-sale reinvention – or indeed the emergence – of the human mode of life. Thus, one can account for the pivotal role manuality plays in human cognitive and cultural development while maintaining its strict contingency. Hands increased the human capacity for transformation and adaptation.

Human technology has also allowed humans to adapt further to their environment and thus in a sense to continue to evolve outside their bodies. Michel Serres has quipped the term 'exo-Darwinism' for this idea of technology as a form of adaptation which is external to the human body. In Deleuze and Guattari's terms, this technological adaptation can be seen as a process of deterritorialisation. Put simply, deterritorialisation is creativity leading to the abandonment of existing (territorial) habits and creation of new ones. As we saw earlier, Deleuze and Guattari present habits and cultural formations essentially as manners of occupying space or a terri-

tory. However, it should be added that particular technological inventions also serve to reterritorialise humans as new habits are developed around them.

Smith also acutely discerns the constructivist implications of Deleuzo-Guattarian metaphysics and machinicity. He discusses a kind of pragmatism of knowledge and science under the heading 'maker's knowledge'. In my view, this pragmatism of knowledge involves three main ideas. First, Gilbert Ryle's concept of 'knowing-how' is necessary for a proper understanding of technology; technology cannot be accounted for as a simple application of the 'knowing-that' of scientific theories (cf. Ryle, 2002, 16–20). Second, the broader significance and role of scientific theories cannot be understood without acknowledging the influence of technology on them. For instance, the so-called scientific revolution involved the invention of a plethora of devices for observation and measuring. However, I am not suggesting that the direction of influence between science and technology simply be reversed, going from technology to science. Instead, scientific theories and technology must be seen as part of a particular, historical assemblage. Third, Smith points out the properly constructivist aspect of Deleuze and Guattari's thought: in Giambattista Vico's words, we can understand only what we have made ourselves. This point of view clarifies Deleuze's idea of philosophy as the creation of concepts: we can only extend our understanding by creating and constructing new concepts.

However, I argue that a pragmatic account of knowledge also requires an analysis of our immediate encounter with materiality. This concerns precisely the intensive aspect of matter as material variation. Further on in Chapter 5, we will come back to a pragmatic notion of knowledge and science as well as to a notion of technics as knowledge of material variation.

4.1 Technical terminology

Before we move on, it is useful to make some distinctions concerning the terminology of technics. By 'technicity', we will refer to the character of technical phenomena in a broad sense, while 'technics' denotes these phenomena, operations and skills themselves. By 'technics' I thus attempt to convey the content of the German *Technik* and the French *technique* and ultimately the Greek $\tau\acute{\epsilon}\chi\nu\eta$. However, 'technics' should not be reduced to the English 'technique', which has a narrower scope and refers to a skilful and controlled way of performing an action. In brief, I would argue that technique is based on technics. On the other hand, in accordance with conventional usage, 'technology' refers to technical machines and tools, as well as to the knowledge and operations involved in their production and use. To use Deleuze and Guattari's distinction, 'technics' and 'technicity' are *intrinsic* characterisations, while 'technology' is an extrinsic one. That is, 'technics' refers to specific, intrinsic modes of operation. By contrast, 'technology' refers extrinsically to a group of technical phenomena and objects which share a vague external resemblance and association. Furthermore, the extrinsic nature of technology can be seen in the fact that it is usually considered as a *means* to something else.[2] Accordingly, we will refer to the characteristically intensive aspects of technicity as 'technics', while 'technology' refers to the elements of the technical strata, i.e. technicity in the more conventional sense. However, where the distinction is not relevant, we may also speak of technical phenomena in general as 'technology', in accordance with general usage.

I adopt the term 'technics' from Lewis Mumford, who defines it as human activity where 'by an energetic organisation of the process of work, man controls and directs the forces of nature for his own purposes' (Mumford, 2000 [1952], 15). Thus, technics

[2] The notion of technology would seem to have fallen prey to what Marx calls *commodity fetishism*, as the word 'technology' primarily evokes technical machines: gadgets, computers etc., or the industrial production process of these or other commodities. By contrast, 'technics' primarily denotes operations and processes.

is the manipulation of a material in a repetitive and systematic way, producing desired effects. It is also essentially an activity or an operation. By this term, I also attempt to reappropriate the traditional Greek concept of $\tau\acute{\epsilon}\chi\nu\eta$ (skill, art). Thus, technics could also constitute a bridge between technology and the fine arts.

Mumford offers a useful specification with regard to different technical instruments and technical processes: (1) machines, (2) tools, (3) utensils and containers, (4) apparatus, and (5) utilities. According to Mumford 'tools and machines transform the environment by changing the shape and location of objects' (Mumford, 2010 [1963], 11). He distinguishes tools and machines on an axis of manipulability and automatism, depending on the 'degree of independence in the operation from the skill and motive power of the operator' (Mumford, 2010 [1963], 10). Utensils are essentially small containers like baskets and pots, while by apparatus Mumford means specific instruments or containers like kilns, which enable chemical transformations such as dying, brewing and cooking. Finally, utilities are static infrastructures like reservoirs, roads and houses, which facilitate particular activities. Mumford also makes the important distinction between mechanical and chemical transformations as different branches of technical operations. Thus, technics has never been limited to simple mechanical movement and production, but for instance the invention of containers made it possible to alter edible substances by chemical processes or to slow undesired processes. Mumford also argues that the mastery of one's own body and experimenting with it is the first manifestation of human technics – he calls this 'biotechnics' (Mumford, 1967, 7).

Technology has traditionally been defined as 'an artificial means of achieving a human goal', i.e. as an instrument (cf. Franssen et al., 2018).[3] As we will see further down, this definition covers only certain forms of technology. More importantly, the definition does not account for the transformative nature of technology and the

[3] Franssen et al. usefully point out the two main characteristics usually associated with technology: instrumentality and productivity. As we will see, Deleuze and Guattari concentrate their machinic and technological thought exclusively on the productive aspects of technics.

creative activity that accompanies it or indeed constitutes it. In short, I will try to demonstrate and conceptualise the creative nature of technology, in contrast to treating it as a mere passive means, tool or instrument. Indeed, in Deleuze and Guattari's analysis, the nature and mode of being of an instrument is always determined by the surrounding social assemblage (MP, 494–95). For instance, tools presuppose a certain form of labour with which they are involved, whereas weapons are not in principle tied to established practices in any comparable manner. Indeed, the tool and the weapon are elements in different assemblages, where they acquire different affects. Rather than merely serving an instrumental function, instruments and technical elements express a mode of life.

Technics differs from technology in that technology either refers to particular technical machines or more generally to the domain of the invention, construction and study of machines. Furthermore, technology is usually viewed as an application of scientific theories. However, I would suggest that the relation between science and technology is more often like a symbiosis or mutual interaction, where technology in fact often plays the dominant role. Furthermore, technics is essentially an active and changing process, while technology appears as established machinery or production structures. Technics should also be distinguished from *technique*. Indeed, 'technique' comes quite close to the Greek notion of $\tau\acute{\epsilon}\chi\nu\eta$ in that it refers to a particular way of achieving a goal. However, technics refers more generally to purposeful and skilful material interaction, of which a technique is a possible outcome and instance. Furthermore, I argue that this skilfulness and purposefulness can and must be distinguished from a teleological perspective on technics. Namely, teleology portrays technics by reference to an external goal, while skill and purpose may simply involve a particular mode of being constituted and made possible by the technics. In the present analysis, I focus on this latter, intrinsic point of view on technics and technology.

Thus, *technics* in a certain sense comprises technology as the elements of its operations. However, as a broader concept, technics contains certain 'non-technological' elements, and vice versa it should be distinguished from certain aspects commonly associated with technology, which are not essential for technics. *Technics is technology primarily in the sense of the capacity or skill of bringing something about.* Consequently, language for instance can be seen as involving bodily technics, while it would be strange to refer to it as 'technology'. On the other hand, technics primarily covers technology which is neither scientific nor industrial. Scientificity and industriality are both natural extensions of technics, but I argue that these are only its secondary aspects.

Thus, I question three common assumptions concerning technology: (1) technology is applied science; (2) technology is essentially industrial. Furthermore, today this second assumption has a relatively new extension: (3) contemporary technology is essentially informational. That is, due to the ever-growing importance of information technology in various dimensions of our daily life, the role of technology is assimilated to this ubiquitous presence of computers and other 'intelligent' devices. First, it is important to note that these common assumptions are all well-founded – they are undoubtedly accurate descriptions of certain aspects of technology. However, I argue that taking them for the essence of technology provokes questions borrowed from science fiction: will computers and robots take over the world? Will we ourselves become computers and robots? I argue that these questions arise from a double confusion: first and foremost, technology is seen as an uncontrollable, autonomous force, and secondly, technology is confused with information technology and reduced to it. Thus, we can witness an age-old promethean fear of technological hubris, combined with an awareness of the growing importance of information technology. However, one thus forgets that the human mode of being has from the outset been profoundly technological, immersed in diverse technologies. I argue that the acknowledgement of the long history of technology undermines its alleged estranging

effect. First, technology cannot be an intrinsically estranging phenomenon, since it has accompanied all human existence from its beginning and technology is arguably even characteristic of humans. Second, granted that technology is not intrinsically estranging, it would seem strange for information technology to be intrinsically estranging. As we shall later see in more detail, we must look at the assemblage in which a particular technology is deployed in order to appreciate its nature and mode of being, rather than treat technology and nature as two autonomous spheres of being.[4]

We must also bear in mind Heidegger's ironic definition of technology (Ger. *Technik*) in 'The Question Concerning Technology' to specify our definition further:

> We ask the question concerning technology [*Technik*] when we ask what it is. Everyone knows the two statements that answer our question. One says: Technology is a means to an end. The other says: Technology is a human activity [*Tun*]. The two definitions of technology belong together. For to posit ends and procure and utilize the means to them is a human activity. The manufacture and utilization of equipment, tools, and machines, the manufactured and used things themselves, and the needs and ends that they serve, all belong to what technology is. The whole complex of these contrivances [*Einrichtungen*] is technology. Technology itself is a contrivance, or, in Latin, an *instrumentum.* (Heidegger, 1977, 4–5)

Heidegger suggests that this double definition of technology or technics as a *means* and as a *purposeful activity* is a superficial one that must be replaced by a more

[4] Noah Yuval Harari is famous for revelling in these dystopic themes in *Homo Deus* (Harari, 2016). Despite the vividness of his portrait of the future, he remains mostly in a traditional, organic framework, interpreting technology as an extension of the human body or as prosthetics. I would also argue that his dystopia concerning the takeover of the planet by computers is based on an unjustified presupposition that artificial intelligence would be centralised and uniform. But whether this takeover be a consequence of human design or of computers' autonomy, why would it converge towards a single, central seat of power? Indeed, this universal commensurability and uniformity is undoubtedly the ideal of digitalisation and programming, but it is far from being a reality.

profound understanding of our technical mode of being in the world. However, although I will not exactly follow the path taken by Heidegger, the two commonplace conceptions concerning technology mentioned by him are a useful starting point for our analysis, as Deleuze is also critical of kindred characterisations of technology in terms of conscious goals.

I shall develop the notion of technics on the basis of the Deleuzo-Guattarian notion of *machine*. This machinic conception of technics has two immediate consequences: first, technics is not defined by *teleology* – in this respect, what is primary in technics is the productive interaction with a material substance, and it is only secondarily defined by a goal or an outcome (Gr. τέλος). I argue that the teleological idea of a goal is simply a consequence of an established use for technology. Moreover, the idea of a goal of technics is incompatible with an intrinsic perspective on technics, which approaches it as an autonomous activity. I will further argue that all technics is essentially a matter of experimentation, which precludes clear, pre-established goals. I shall analyse the experimental aspect of technics further below in 4.4.

I will argue that technics is essentially *machinic* in Deleuze and Guattari's sense. However, the machinic point of view does not only characterise the relation between a human being and matter, but it already concerns material phenomena themselves and the relations between material bodies and processes. Furthermore, we must retain the definition from Part I that the essence of machinicity is *affective and transformative assembling*. Thus, machines always appear as assembled, as territorial assemblages defined by dynamic affects, but these assemblages are constantly undone and opened up to transformations and new connections. As we saw in 2.8, this transformational process is what Deleuze and Guattari call the assemblage's vector of deterritorialisation. According to Deleuze and Guattari, human technics does provide the privileged instance of machinicity, as humans are able to deterritorialise the rest of nature, machinating it for their purposes. On the other hand, for

Deleuze and Guattari, *inorganic life* is the essence of machinicity, that is, processes which surpass existing organisms and their habits. How can machinicity be at once characteristically human and inorganic? I would suggest that humans are in their habitual, sedentary existence the furthest removed from this inorganic undercurrent, but we are at the same time ultimately best disposed to regain it by our creativity.

We can only shed light on the concrete nature of technical knowledge from a material perspective, which precisely involves affective and transformational machinicity. That is, technical knowledge must be studied from the point of view of material processes, assemblages of material bodies, and our interaction with them. This does not entail jettisoning altogether the role of theory and science with regard to technical knowledge and technology. However, I propose two principles concerning the material side of science and technics, which have been overlooked in spite of their simple and intuitive nature: (1) technology and technical knowledge are primarily material and only secondarily theoretical; (2) moreover, all scientific domains and activities possess their proper technical, material dimension. At the most general level, this materiality consists of *operations*, which I will elaborate later on in Chapter 5.

4.2 Theoretical, practical and technical knowledge

I suggested above that technics is essentially material knowledge. However, we have also seen that technology is often associated with theoretical knowledge as its application or extension. Furthermore, I will argue that the materiality of technics is closely connected to the pragmatic aspects of technics. Thus, in order to clarify the relation between technics and knowledge, it is useful first to elaborate the difference between technics and two traditional branches of knowledge: theoretical knowledge and practical, moral knowledge.

In the *Nicomachean Ethics*, Aristotle first lists five faculties for attaining truth: (1) art or technical skill (*τέχνη*), (2) scientific knowledge (*ἐπιστήμη*), (3) prudence (*φρόνησις*), (4) wisdom (*σοφία*), (5) intelligence (*νοῦς*). However, he ultimately drops technical skill from the list without justifying this lapsus (see Aristotle, 1926, 1141a).[5] We will here concentrate only on the first three kinds of knowledge: *τέχνη* (technical knowhow, art, skill), *φρόνησις* (prudence, ethical, practical knowledge or tact) and *ἐπιστήμη* (scientific, theoretical knowledge). Namely, Aristotle only discusses technical skill in order to distinguish it from prudence or practical wisdom, while the consideration of scientific knowledge allows us to distinguish between theoretical and practical knowledge.

First of all, for Aristotle, *art* is a kind of making or producing (*ποίησις*) which possesses a reason or principle (*λόγος*). Second, art produces contingent things, as its products do not have their origin (*ἀρχή*) in themselves, as natural things do (Aristotle, 1926, 1140a1–23). Similarly to this artful, technical skill, prudence (*φρόνησις*) also concerns variable and contingent phenomena, but only in the sphere of *action* (*πρᾶξις*), and thus prudence also constitutes an end in itself. Consequently, prudence aims at a kind of contingent truth of human action and behaviour, while theoretical knowledge seeks to attain the universal and necessary truths of reality. However, Aristotle does not assign a special kind of truth to artful skill, plausibly because it does not possess its end in itself, in contrast to prudence and theoretical knowledge. Namely, the artful skill can only be 'truthful' (*αληθούς*) to the external goal and the principle it follows. Still, it only points towards its goal and is not an end or truth in itself. (Aristotle, 1926, 1140a20–1141a8)

Thus, for Aristotle, theoretical knowledge and ethical action or praxis are ends in themselves, while production or *ποίησις* is a means to an external goal. This goal-oriented productivity is indeed essential to many forms of technics, but I argue

[5] Technical skill would seem to be omitted from the list because, unlike the other forms of knowledge and of attaining truth, it clearly cannot be concerned with first principles, as it is precisely concerned with means, not ends themselves.

that technical productivity also manifests an intrinsic form of activity, and thus it cannot be defined merely in terms of an alleged external goal. Indeed, Aristotle himself assimilates activities (*πρᾶξις*) and productive skills (*τέχνη*) (e.g. flute or lyre playing and house building) and calls them both 'functions' (*ἔργον*) or 'activities' (*πρᾶξις*). Skilful activities and productive functions as well as ethical virtues all have to be learnt or acquired, and the attained mastery in all these cases involves a kind of excellence. However, the determining factors for Aristotle are the domain of the faculty (invariable or variable things) and the nature of the goal involved (intrinsic or extrinsic). Thus, even if productive arts involve excellence in terms of perfecting the relevant procedures and the use of one's instruments – one's art – ultimately, all these activities are subservient to the qualities of the final product, which is their goal. By contrast, I argue that the Deleuzo-Guattarian account of technics combines the two faculties concerning variable things (*πρᾶξις* and *ποίησις*), so that productivity is no longer defined by an external goal, and activity is no longer defined by an intrinsic goal, but both become functions of desire as *connectivity*.

Technical knowledge is practical, but not practical knowledge in the primarily Aristotelian or Kantian moral sense, according to which it means conscious, prescriptive and universal principles guiding our actions (see e.g. Engstrom, 2009; Lumer, 2010). In distinction to the widespread notion of practical knowledge as *morality*, which is epitomised by moral maxims and laws, it would seem clear that technical knowledge itself does not take a *propositional form*.[6] Second, I argue that technical knowledge is primarily *local* instead of global or universal. By this locality I mean that technical knowledge only manifests in particular, concrete situations, and it is only transmitted continuously from one individual to another. Admittedly, moral principles also concern concrete actions, but by their essence they aspire to generality and universality. I further argue that the non-propositionality and locality of technical knowledge both stem from its essential *materiality*.

[6] This can be seen for instance in the unintelligibility of most user's guides, manuals and assembling instructions.

4.3 Artificiality, functionalism and causality in technics

The analysis of artefacts is a prominent line of research in current philosophy of technology. Why are artefacts relevant for technology? Intuitively, the domain of artefacts coincides with that of the products of technology and human industry, so it would seem that we need an analysis of the nature of artefacts in order to know what we are talking about when analysing the nature of technology. However, I will try to show that the distinction between nature and artefact is a superficial one and ultimately obfuscates the relation between technical and natural phenomena. Indeed, as we saw in Part I, according to Deleuze and Guattari, the distinction between nature and artefact only makes sense if it is understood as a distinction between anthropomorphic stratification and other, 'natural' forms of stratification. However, the anthropomorphic stratum already potentially appropriates all the other types of strata into its content by modifying them. Furthermore, the development and transformations of strata imply destratified machinic processes, irreducible to any regular, territorial or stratic patterns. That is, according to Deleuze and Guattari, all natural and artificial things are subject to machinic processes which undermine the distinction between nature and artefact. In addition, technology itself undermines this distinction by modifying natural beings and processes.

Besides the ontological analysis of artefacts and technical objects, the functional analysis of artefacts is another popular theme in philosophy of technology. According to this line of thought, technology is embodied in tools and machines, which are artefacts and always serve certain *functions*. Indeed, tools and machines clearly have purposive and causal roles in diverse contexts, and even the etymology of 'technology' is $\tau\acute{\epsilon}\chi\nu\eta$, which evokes an *art* as a *means* to a certain end or an instrument to achieve a goal external to the instrument (cf. Aristotle, 1926, 1140a1–23). Instead of this classical teleological account of functionality, it is more common today to

resort to a more properly functional definition of technology as mediating particular desired effects from given causes.

However, I argue that the prevailing notion of functionalism is both in its teleological and causal form overly humanistic and anthropocentric. This is evident from the habit of defining the function of an artefact by its purpose, which is inevitably analysed in terms of human intention (see Franssen et al., 2018). Mahner and Bunge distinguish a variety of uses of the term 'function' in different domains, but I argue that the uses they cite are all based on two basic points of view: intentional and causal (cf. Mahner and Bunge, 2001). First, the intentionally motivated functions are based on human intentions, which are external to the phenomenon, and are equivalent to teleological explanations. Second, the causal form of functionalism seeks to express the causal relations between natural objects: a function links together certain causes and effects. But I argue that this causal conception of functionalism also relies upon human interpretations of events, as already noted in Reid's classic analysis of causality (Reid, 2010, 32). According to Reid, we get the general notion of causality from our own sense of active power – we can make things happen. Hence, we project these active powers onto natural events as well. Reid's analysis of causality is not conclusive, but it usefully pinpoints a human element in the notion of causality and hence also in causal functionalism.

What in my view is problematic in the concept of causality is not so much the reality of causal relations as their demarcation. It would seem that causes and effects are the result of an interpretative division of a phenomenon into constitutive elements. What is here humanistic is simply that we assign our own interpretations and interests to real events. But how could we ever avoid doing this if we are to know anything about reality? Indeed we cannot, but we can discern more subtle elements in phenomena that are more intrinsic to the phenomena than simple causes and effects. For instance, the development of an embryo is clearly a process with a direction and with a specific order of stages of development, but what is more

important here are the features of the successive stages rather than their causal relations. Indeed, one must first discern a *process of individuation* in order to assign causes and effects, and these should always be interpreted as relative notions. All phenomena manifest variation and I argue that it is this variation that we know when we know or master a phenomenon. Expressed from the point of view of the analysis of technics, we know the variation of a phenomenon if we are able to manipulate it or to bring it about (cf. Hacking, 1983).

The point in this critique of causality is thus not to discard the notion of causality but to relativise its importance. I propose that causes are relevant as side-effects or as accompanying events of a phenomenon, which express a phenomenon of variation, especially from the perspective of our interaction with the phenomenon. Indeed, instead of merely observing a phenomenon, I would with Hacking underline the importance of intervening within a phenomenon, which clearly also involves a consideration of causes and effects. However, I would argue that causes are relevant precisely because they express *important* aspects of the phenomenon. For instance, fire or more generally heat is the cause of the boiling of water, but the more *relevant* fact is undoubtedly that water starts boiling at 100 ℃. Thus, 100 ℃ is a singular temperature for water, in contrast to temperatures where water behaves regularly.

Furthermore, due to its anthropomorphism, the notion of causality is closely connected to a nomological notion of reality as obeying the 'laws of nature', expressible as propositions. However, I argue that for instance the boiling point of water does *not* indicate a 'law of nature', but more essentially a singular point within the variation pertaining to water. Similarly, we do not profess knowledge of water by collecting true propositions about it but instead by learning how it behaves and also how to manipulate this behaviour. Also, this operational approach makes it much easier to account for variation due to changes in air pressure and other conditions which affect the so-called laws of nature. In such an operational and affective approach, the variation of the phenomenon remains the same in different circumstances, but it

is simply transposed according to the circumstances. Still, one might need to change the operations required for the manipulation of the phenomenon; for instance, one needs a different kettle to make water boil at high altitudes. Indeed, we must extend the analysis of the phenomenon to the whole relevant assemblage and its individuality or process of individuation, its *haecceity*. However, this does not compromise the individuation of the phenomenon, since variation is part of the phenomenon, or rather constitutes it. Indeed, it is a key assumption in Deleuze's ontology that variation and exceptions are more fundamental and more relevant than invariance and regularity. Accordingly, different assemblages simply provoke different parts of the variation, different *affects* or intensities.

4.4 Experimentation

Our first hypothesis in this part was that technics is material knowledge. However, in order to understand the broader nature of technics, we must analyse its machinic aspects as *transformative assembling*. I argue that such machinic technics is necessarily *experimental*: it follows material variations and pushes their inherent potentials further, yielding unforeseen effects. Furthermore, in accordance with the general assembled nature of technics, experimentation is not an isolated endeavour, but it is essentially assembled and assembling. However, in Deleuze and Guattari's account, experimentation concerns solely the deterritorialising vector of assemblages, as experimentation consists precisely in opening an assemblage to new elements, variations and configurations, new assemblages.

Also, I insist that all experimentation, scientific, technical or pragmatic, is always based on a technics and a pragmatic knowledge of a material of some kind. However, the novelty of experimentation would thus be based precisely on our *ignorance* of the full potential of the material, i.e. the variations it may manifest in different circumstances. Accordingly, experimentation should not be reduced to the verifica-

tion or falsification of a theory or hypothesis as possible knowledge, as is often done in theoretical accounts of scientific experimentation. With Hacking, I would argue that in all significant cases in the scientific context, scientific theories and experimentation are ultimately always intertwined, and that their relation of dependence goes both ways: scientific experimentation can be heavily 'theory-laden', while the formulation of a theory may be preceded by years of experimenting (see Hacking, 1983, 158–59).

Hacking rightly emphasises the importance of experimentation in scientific practices. However, I would suggest two qualifications to his conception. First, we must define experimentation as a kind of *operation*. Experimentation is crucial to the development of scientific knowledge, but I argue that it is essentially manifested as operations, and furthermore, the products of experimentation are also conserved as operational habits. Second, science is not only the study of operations manipulating nature, it is also the study of operations *within* nature. That is, human beings as scientists are in no way fundamentally different from the objects they study. Knowledge of nature then consists of operations both objectively and subjectively – we know operations and we know *by* operations.[7] This does not mean that the method of knowing and the object of knowledge could not be distinguished from one another – the cognitive, heuristic operations and the diverse natural operations they concern are not identical nor interchangeable. Nevertheless, I claim that it is this concrete communication of heterogeneous operations that gives rise to science in the first place – not the attempt to represent nature.

This operational nature of knowledge would seem to be evident in so-called pragmatic knowledge. For instance, in the case of swimming the tacit understanding of natural operations immediately involves mutually inseparable mental and physical operations in the swimmer herself. We talk of 'skills' in these cases of knowledge, where cognitive operations are immediately connected with bodily and natural oper-

[7] As I have mentioned, Smith (2018) also stresses the importance of this constructive aspect of knowledge: we only understand what we can construe or replicate ourselves.

ations or processes. Furthermore, I argue that knowledge always intertwines mental and physical operations, but in the case of theoretical understanding the operations can only be perceived as mental and as intuitive, because in carrying out an operation we understand it from within so to speak. Nevertheless, this necessarily also involves a change in our bodily make-up, of which we are not conscious, but it is perceptible as a concrete, physiological change.

But what is the point of claiming that mental change always involves bodily change and *vice versa* if you cannot know or modify the precise nature of most of these changes? The relevant thing to notice is that no ultimate difference in kind can be established between theoretical knowledge and technical knowledge: both are concrete bodily skills, which only involve different parts of the body. In addition, the materiality of knowledge is not limited to one's own body, but potentially involves all kinds of external elements or media (such as water in the case of swimming), materials, instruments, tools and machines.

4.5 Technics and consciousness, a defence of materialism

Our primary aim in this work is to analyse the immediate materiality of technical knowledge, and in order to do this, we need to question the dominant role usually given to consciousness in philosophical accounts of knowledge. This problematic presupposition could be formulated in the following manner: *all knowledge can be represented as the content of a conscious mind.* Yet technical knowledge would clearly become meaningless or impossible if subjected to such a criterion. The traditional solution has been to ignore this problem by concentrating on theoretical, propositional knowledge. However, it would seem that in doing so one also neglects an important part of the context and significance of theoretical knowledge, as I have tried to show above.

Conversely, if epistemology cannot dispense with pragmatic, technical knowledge, neither can our account of technics as immediate, material knowledge dispense with consciousness altogether. I am primarily proposing that technical knowledge is autonomous from the structures of consciousness and should not be subordinated to them. Nevertheless, consciousness is undoubtedly a real phenomenon. However, the dominance of consciousness in epistemology does not stem from acknowledging this humble fact, but in addition, an *a priori* status and structure are allotted to consciousness. The sheer existence of consciousness has been taken to entail all sorts of consequences and necessary conditions – the existence of a particular thinking thing (Descartes), the unity of experience (Kant), etc.

Even if we are sceptical concerning particular characterisations of consciousness, we must take its existence seriously and account for it. This is the basic problem of any materialistically oriented theory – if reality is essentially different from consciousness, how does consciousness come about in such a world? And if one takes one step further by claiming that consciousness and related notions are but *flauta voci*, how do these empty words come about and how do they relate to the supposedly fuller things of reality? Put briefly, in order to be a full account of reality, materialism must simply appropriate all the seemingly idealistic elements as well, without reducing them to something else. Accordingly, it would seem that a materialist account of consciousness must acknowledge its existence and omnipresence, but simply deny it any direct, privileged access to material phenomena.

With Deleuze, I would argue that Spinoza's philosophy dispenses with all the main conceptual problems related to materialist philosophies.[8] First, Spinoza acknowledges the reality of consciousness as a distinct perspective to reality, as a 'mode of thought'. Secondly however, each conscious perspective (mode of thought) is only very limited and thus our simple impressions are never completely adequate. All consciousness is in this respect false consciousness, all representation is limited

[8] More precisely, Deleuze asserts that Spinoza succeeds in creating a completely *immanent* philosophical system.

and as such falsifying. Deleuze refers to this as Spinoza's first kind of knowledge: it is symbolic, representative knowledge based on impressions and beliefs. However, we can learn to know the interactive relations and modes of composition between things, which by contrast we can know absolutely (Spinoza, 1972, II, p43). This would be the second kind of knowledge. For instance, if I jump into a deep lake, I will soon become anxious if I do not know how to swim. I am then at the mercy of the water and utterly unaware of its workings upon me and my body. I do have some sensations and impressions concerning the menacing element, but these are simply a source of anxiety and terror. However, if I slowly experiment moving my limbs around while appreciating the interaction of this movement with the water around me, I can gradually learn to swim and suddenly the watery sensation on my body will no longer be a source of anxiety. (see Subsection 1.8.2)

It would seem that we do not know reality primarily by developing a clearer representation of it, but by learning to act in reality by relating to it. I claim that we must interact with reality in order to know something about it – one cannot possess knowledge simply by oneself. Thus, we must rid ourselves of the representationalist ideal that knowledge would be akin to a clear, conscious vision of the object of knowledge. Vision is evidently an important source of knowledge, but when we acquire knowledge by seeing we are also always doing something: we *discern*, *notice*, *find*, *recognise* etc. More importantly however, due to its habitual nature, vision would usually seem to serve as a mere instrument of knowledge and cognition, in particular as part of sensorimotor activities, e.g. in the coordination of the hand and the eye. So, seeing as such has mainly an instrumental role in learning and acquiring knowledge, and the faculty is not pursued for itself, as for instance in the context of visual arts. Accordingly, the cognitive role of vision can in most cases

be expressed in terms of the kind of cognitive operations or functions named above, which do not necessarily require vision.[9]

Just as vision is an important instrument of knowledge but not its embodiment, consciousness should be viewed as an instrument of knowledge and not as its embodiment. With more abstract forms of knowledge such as mathematics it is easy to think in a Kantian vein that the structure of our consciousness constitutes the primordial form of our knowledge. Indeed, for Kant, mathematics consists in the contemplation of the *a priori* temporal and spatial structures of our consciousness. However, with more practical examples such as all kinds of skills, it becomes evident that our consciousness is but an expression of an inner perspective on the activity, and its formal characteristics have no intrinsic role in the activity. For instance, we can easily run or swim without necessarily thinking about it. Many habitual activities even seem to become more difficult if we consciously think about them while carrying them out.

Many people and especially philosophers take consciousness to be the hallmark of human experience. Consequently, consciousness has become a privileged arena for theoretical and philosophical constructions. Indeed, as I have already argued, it would be senseless to deny the existence of consciousness altogether. What I propose to do instead is simply to minimise our assumptions concerning its nature and structure. That is, I argue that consciousness is essentially a particular, local and concrete perspective on the world. Furthermore, we should acknowledge the possibility that all real things have this kind of perspective, which is thus not predominantly human. There are doubtless significant differences between different perspectives, but these differences must be looked into individually instead of presuming a prevailing human perspective, according to which all other perspectives are modelled and represented and to which they are thus subsumed.

[9] In Section 7.2, which focuses on the notion of *code*, I discuss Deleuze's distinction between this sensorimotor seeing and purely *optical* vision in art, which according to Deleuze liberates vision from its usual, sensorimotor function.

4.6 Phases of technology and technological models

I argue that technology plays a crucial part in Deleuze and Guattari's philosophy and especially in their theory of machinicity. However, this relation is by no means simple or unambiguous, as first of all, Deleuze and Guattari distinguish desiring machines sharply from technical machines and gadgets, these being according to them mere 'remainders' of the machinations of desire within a capitalist market (AO, 463). That is, for Deleuze and Guattari, technical machines are only properly machinic by virtue of their role in a social machine or in an assemblage. Furthermore, the machinicity of an assemblage essentially consists in its creative and liberating potential, not in its technical machinery or its mechanical functioning. Thus, for Deleuze and Guattari, endorsing machinic creativity is not synonymous with technocracy:

> Each time technology pretends to act by itself, it takes on a fascist colour, as in the techno-structure, because it implies not only economic and political investments, but also libidinal investments, aimed wholeheartedly at the oppression of desire. (AO, 480)

This oppressive function of technology is for Deleuze and Guattari not primarily a question of the intentions of its proponents (e.g. the national-socialists in 1930s Germany), but more importantly of its mode of operation and connection. In any case, Deleuze and Guattari's machinic thinking in no way calls for a kind of techno-religion, but at the same time, the technological origin of the concept of machine is essential: technology is not only an instrument of oppression, but also a creative force. Indeed, one of Deleuze and Guattari's aims is to provide more creative and liberating alternatives to the different mechanical models of thought inspired by technology.

The historico-cultural importance of technology is vividly present in the names of prehistoric ages, which are named after their supposedly dominant technological materials (stone, bronze, iron). With the advent of more abundant written accounts of events, this narrative scheme ends and it is replaced by names of ideologies and references to the spirit of the age. Even the term 'Middle Ages' evokes the spiritual and intellectual stagnation of the period, with no characteristic of its own, except for the pejorative epithet 'dark'. Nevertheless, even in periods during which technology is not considered dominant, technical inventions have still given shape to the collective imagination and its schemes of thought.

First of all, the systematisation of measuring time in medieval monasteries served as a model for the punctual and well-ordered functioning of the whole monastery system. Mumford argues that the essential invention of the monasteries was the quantification and mechanisation of *time* itself. At first, the monks had water clocks to set a reliable pace for their daily routine, especially for the canonical hours. Mumford sees the mechanisation of time together with an industrious work ethic as the foundation of modern life and a prerequisite for the functioning of capitalism (Mumford, 2010 [1963], 12–15). Later on, at the time of the Renaissance invention of clockwork, it became the symbol of the deterministic and mechanistic world-view dominating early modern natural philosophy – the universe as clock-work. Then, in the context of the eighteenth and nineteenth centuries, Deleuze and Guattari refer to motor machines as the second age of technology (AO, 478). Here the essential scientific counterpart would be thermodynamics and the principle of entropy. Again, a techno-scientific scheme gave rise to an image of nature, this time on the road towards the cancelling of all differences, ultimately leading to the end of the world (cf. DR, 288–89; Smith, 2018). Finally, in contemporary culture, *information* replaces the primacy of thermodynamics and motor machines (AO, 478). Accompanying the advent of information machines, the scientific image of our whole biological existence became informational: DNA is habitually described as a code transmitting

information. Furthermore, the privileged organ of human intelligence, the brain, is primarily imagined as a centralised system for processing information, that is, a kind of computer.

Thus, technology has provided powerful models which define whole ages. Not only are these technological inventions symbols for historical periods, but they also concretely direct the way people structure their world-view and their thinking. This is one of the reasons why Deleuze and Guattari propose alternative schemes for all these models or images of thought. As I have already indicated, their concept of machinicity presents an alternative to mechanistic models. Furthermore, in *Difference and Repetition*, Deleuze introduces his theory of intensive differences in potential or becoming as an alternative to the thermodynamic model of entropy. Finally, in *A Thousand Plateaus*, the concept of rhizome and the synthesiser can be seen as alternatives to the computer's centralised model of information processing.

First, in contrast to the closed mechanic system determined in terms of space, time and mass, machinicity refers to an open communication between heterogeneous elements, leading to new assemblages. Second, intensive differences in potential mark positive states of difference which generate phenomena and cannot be reduced to their entropic actualisation. Third, the creative evolutionary processes in nature as well as the workings of the brain resemble more the complex and nonlinear growth of a rhizome than that of a computer with a central memory and a treelike organisation of information. I argue that the corresponding, rhizomatic technical model would be the synthesiser, which assembles heterogeneous modules that interact and communicate without central mediation, but nevertheless produces a single, consistent, univocal, 'consolidated' output.

Furthermore, in his late article 'Post-Scriptum on Societies of Control' (1990), Deleuze links these technological phases to changes in the form of *power*. First, mechanical machines correspond to sovereign societies whose form of power operates by means of direct coercion, e.g. in terms of corporal punishment. Energetic machines,

on the other hand, are typical of the industrial age with its practices of confinement (factories, prisons, hospitals, schools etc.). Finally, in the contemporary age of information technology, according to Deleuze, power takes the form of *control*, with information as its medium. We will discuss this social role of information technology further in Chapter 7.

Chapter 5

Pragmatism and materialism of knowledge

We saw in Part I that materiality is, according to Deleuze, essentially characterised by the intensive features of processuality and variation. I argue that this intensive materiality is what technics interacts with and also constitutes the proper object of technical knowledge. However, in order to understand the material nature of technical knowledge, I argue we must consider the material dimension of all knowledge. Deleuze and Guattari characterise this dimension as machinic and 'pragmatic'. Accordingly, in this chapter, we will first discuss pragmatist theories of knowledge and science. The project of these theories has been to analyse the concrete and active side of knowledge, in contrast to its theoretical and formal aspects. In addition to shedding light on the notion of practical knowledge, the pragmatist tradition also shares several fruitful points of contact with Deleuze and Guattari's machinic approach to knowledge and science. Second, we will examine Deleuze and Guattari's views on the materiality of technical knowledge.

I argue that the pragmatist approach to science and knowledge manifests three key aspects of Deleuzo-Guattarian *machinicity*: (1) *machinic assembling* in terms

of operations and experimentation, which takes place in a concrete setting rather than in a theoretical representation, (2) *affectivity*, which expresses the nature of these machinic interactions, (3) *problems* as the proper object of knowledge instead of actual experience of extensions and qualities (Cf. Dewey, 1929, 103).

We will look at the pragmatic elements of science and disclose a more general pragmatic and technical dimension in scientific practices. I would argue that *operations*, present in all scientific domains, constitute distinctly technical phenomena which, however, have been sublimated in mathematics and logic into abstract symbolism. This abstraction would seem to inevitably lead to the downplaying of the pragmatic, technical nature of operations. Experimentation is another pragmatic element of science, which is crucial to all scientific progress and involves an active component, not reducible to the mere verification of a representation.

However, even if the pragmatist philosophy of science brings out these machinic aspects of knowledge, as e.g. in the case of Dewey, it does not involve a consideration of materiality as such, which I argue is necessary for an understanding of technical knowledge. This neglect of materiality is also manifest in the pragmatists' focus on science rather than on technical knowledge. Indeed, I argue that technical knowledge always involves interaction with the intensive, immediate aspects of matter. In Deleuze and Guattari's account of technological activities, this intensive dimension is expressed as the *affects* and *singularities* of the material and of the operations applied to the material. I argue that this intensive dimension is ultimately a sphere of creativity which is irreducible to the elements of a human, technological stratum, and manifests the transformative potential of this stratum. As we will see further down in more detail, Deleuze and Guattari analyse ancient metallurgy as a privileged case of technical creativity. For Deleuze and Guattari, metallurgy involves the intuition of the deterritorialised potential of metal, and this intuition manifests as the following and tracing of intensive material variations in the metal. Deleuze and Guattari

also describe these variations as the 'life of matter', thus evoking their concept of inorganic life.

5.1 Pragmatic epistemology

Analytic philosophy of science was for most of the twentieth century dominated by a linguistic and theory-focused perspective (the so-called causal-nomological approach). This approach was introduced by Austrian philosophers of the Vienna Circle who emigrated to the United States (perhaps most importantly Rudolph Carnap in 1935, Carl Hempel in 1937 and Hans Reichenbach in 1938). They of course did not teach a deliberately unified, single theory of knowledge and science, but still, the influence of their philosophical conception is still visible in contemporary analytic philosophy in its focus on logical models and syntax.

However, before this logicistic intervention, there already existed in North America a powerful pragmatist approach to science (notably C.S. Peirce, William James and John Dewey). This pragmatist perspective is perhaps best exemplified by John Dewey, who emphasises the practical aspects of knowledge and also considers its social role and its relation to technology. To put it briefly, in Dewey's view *knowing is doing* (cf. Dewey, 1929, 24, 87). Some of the pragmatists' ideas have been influential, but I would argue that the actual pragmatic element was obscured by the logical and linguistic zeal of the Viennese thinkers. Later in the 1980s, Bas van Fraassen and Peter Achinstein also presented theories of explanation in the pragmatic spirit (De Regt, 168). Moreover, I would argue that the interventionism of Nancy Cartwright and Ian Hacking is an important revival of the pragmatic spirit.

Pragmatism is often associated with a conception of truth and knowledge as something useful or successful in terms of concrete practices, in contrast to approaches where truth is analysed as a property of propositions. Similarly, knowledge for a pragmatist is not representation but a way of relating to phenomena. This prag-

matist particularism lends itself aptly to the consideration of the practical nature of knowledge, as it implies that what is special about knowing and science is not their 'disclosing' or 'representative' character but instead their manner of engaging with reality in a novel way. I maintain that such engagement is primarily material and technical. That is, transforming our relation to our surroundings necessarily affects material things and processes around us but also ourselves as material beings.[1]

Dewey acknowledges this material basis of knowing and experimentality but downplays its importance in favour of the more systematic, general and homogenising scientific knowledge (Dewey, 1929, 87). By contrast, I insist that knowledge is primarily knowing *how*. I will call the study of the material conditions of knowledge 'pragmatic epistemology' to distinguish it from the theories associated with pragmatism. Namely, even though pragmatist philosophers vindicated the practical, concrete circumstances of knowledge and science, they nevertheless took the natural sciences as the model of knowledge, instead of technology and technical knowledge.

Moreover, the term 'pragmatics' also evokes the linguistic term for the concrete immediate circumstances and conditions of linguistic expressions and acts (see Section 2.8). Deleuze and Guattari use the term 'pragmatics' primarily in this linguistic sense (cf. MP, 98–109, 114–19). However, they seek to demonstrate the centrality of this category for all semiotic expressivity (MP, 170–84). Accordingly, I would also include in *pragmatic epistemology* the consideration of the material actions, operations and circumstances which accompany cognitive, epistemic and scientific activities, expressions and discourses.

[1] I further argue that this pragmatic and operative side of all discursive practices and knowledge is also the materialist crux of Marx's 'Theses on Feuerbach', especially of the final, eleventh one: 'Philosophers have only interpreted the world in various ways; the point is to change it'. However, the point is not to turn philosophy into a mouthpiece of a political ideology nor to discard philosophy and thinking altogether but to acknowledge and engage in the concrete and pragmatic side of cognitive and discursive activities. I argue that this is what Marx means by the terms 'practical' (*praktisch*) and 'activity' (*Tätigkeit*, *Praxis*). In brief, a philosopher must approach the world as a practical system, not only as an object of representation. More importantly, this pragmatic outlook requires approaching the world in its intrinsic variability, affectivity, functionality and changeability, which necessarily involves active participation and intervention: 'how does it work?' and 'what is it capable of?' rather than 'what is it?' or 'what is it like?'. (Cf. Marx and Engels, 2010)

5.2 The importance of pragmatic distinctions

Drawing on C.S. Peirce, William James defined pragmatism in terms of making relevant distinctions in relation to our experience and practices (James, 1916, 45–47, cf. Peirce, 1878). That is, in James's view, a concept is valid from a pragmatist point of view if it *makes a difference*, i.e. it enables a relevant distinction concerning reality and our experience. Accordingly, the primary problem for a pragmatist philosopher is not whether a concept corresponds to reality and in this sense is *true* but whether it makes a difference; in what way is the world different in light of the concept as opposed to in its absence?

The pragmatist focus on relevant distinctions has several important implications concerning traditional philosophical problems. First, James is critical of *general truths*. It is relatively easy to pronounce general, *a priori* statements that are true or at least not obviously false – 'every event has a cause', 'all matter is extended' etc. – but these true propositions are meaningless, as their truth or falsity makes no difference to our experience. Thus, James's pragmatic principle offers a criterion of relevance for concepts, because a relevant distinction permits the concept to be tied to a particular context.

Second, even if a philosophical distinction seems to lead to contradictions, it may still be a fruitful one. James cites Descartes' famous dualism as an example of such a distinction (James, 1912, 30–31). Indeed, on the basis of Descartes' definition of the body and the soul as autonomous substances, it is easy to refute his notion of their interaction. However, it is more difficult to prove that the distinction of body and soul is altogether impossible. This is what e.g. Spinoza in a way seeks to do with his monism, but it is emblematic that he in fact maintains the distinction, albeit in a different form, as attributes of a single substance. Thus, there is nothing wrong with the distinction between body and soul as such, only with the way Descartes formulates and conceptualises it. From this point of view, James's principle allows

us to see that some notions and distinctions may correspond to something real even if their overall formulation is flawed.

Incidentally, James's principle has its close equivalents in Deleuze's philosophy: his distinctions between the important and unimportant, remarkable and ordinary, singular and regular. Deleuze in a way generalises James's principle and claims that what enables us to perceive or know a phenomenon at all are its *singularities* or singular points that are distinct from its ordinary points (see Section 1.4). Similarly to James, the essence of a phenomenon for Deleuze is not its truth but the distribution of its singular and ordinary points. The singular points are what distinguish the phenomenon from other phenomena. The singularities also distinguish the relevant features of the phenomenon from less remarkable features, the platitudes that can be said of the phenomenon. For example, there are numerous temperatures at which water is solid, liquid or gaseous but only limited, punctual ranges where the transitions between these states happen (melting, freezing, evaporating, condensing). Thus, knowing what water does at 0 ℃ and 100 ℃ and how to bring these phenomena about – its singularities and the corresponding affects – is very different from knowing what it does at 10 ℃ and 20 ℃.

But is the Deleuzean distinction between the important and the unimportant not a simple rephrasing of the Aristotelian notions of essential and accidental properties? Indeed, both would seem to advocate a distinction between the important and the irrelevant, but I argue that these two interpretations of the distinction are distributed very differently. For Deleuze, all events, important and unimportant, are manifestations of the mode of being of an *individual* or more exactly of an *individuation*. Thus, a particular process of individuation is always the context for the distinction between singular events and the regular intervals between them. Consequently, so-called accidental properties, e.g. being wounded, can in the Deleuzean framework be singular and relevant. By contrast for Aristotle, a wound is certainly not an essential property of anything, as it is almost by definition a temporary state of affairs,

affecting the wounded being from the outside and disturbing its proper functioning. Moreover, essential properties are emblematically regular features within a species. Admittedly, essential properties do distinguish one essence and species of things from others – indeed, this is their theoretical function. In this case, James is potentially more permissive than Deleuze – James might accept Aristotle's distinction between essence and accident as possibly useful for some purpose, while Deleuze rules it out as an utter conflation of the important and the unimportant. Aristotle's distinction perhaps allows us to distinguish humans from other animals, but not to discern any differences within human behaviour itself – human existence is simply closer to or further from its purported essence, which distinguishes it from other animals and beings. Most importantly, Deleuze argues that essential distinctions presuppose the distinctions between the important and the unimportant: importance and relevance are what enable us to distinguish between things in the first place, not essences, which are based on averages and generalisations.

It is also useful to contrast Deleuze's theory of the singular and the regular with Dewey's account of the development of science in *The Quest for Certainty* (Dewey, 1929, 88–97). Dewey argues that the most important conceptual change of the scientific revolution ushered in by Descartes and Galileo was the critical attitude adopted towards the material of our perceptions. That is, in ancient Greece, science was concerned with observations in a critical and systematic way, but only concerning its *form*. Phenomena conveyed variable, imperfect forms and the job of science was to find the true, perfect forms hinted at by the phenomena. Still, Greek science dealt with phenomena that could be easily observed and considered by anyone, not requiring special instruments of observation and measurement. The specific contribution of science (as well as of Greek art) was to impose harmony and proportion onto the raw material of sense experience, expressed as qualities. For this reason, Dewey calls Greek science *aesthetic*. Furthermore, Dewey cites Bergson's claim that for the Greeks, a phenomenon and its processual character constitute a

qualitative whole, whose essence is condensed in a 'privileged moment' which is the *τέλος* of the process towards which it tends. By contrast, the revolutionary invention of modern physics would be to have investigated the quantitative changes of mass and motion, which produce the qualitative changes appreciated by the Greeks. Thus, modern physics does not leave the various qualities of e.g. water – liquid, cold/solid, hot/gaseous – as individual qualities, but seeks to fathom an underlying quantitative principle which produces all these different qualities and changes.

Deleuze also bases his analysis of the theories of movement on this Bergsonian idea from *Creative Evolution*, but he analyses the contribution of modern science differently from Dewey (C1, 9, 12–15). Namely, while for Dewey the revolutionary idea was to homogenise movement, for Deleuze, the more essential invention was the notion of *instantaneous speed*. That is, movement was no longer defined by a privileged moment, but became a quantitative phenomenon that could be analysed into arbitrarily small fractions. This infinitesimal quantification makes the singular and regular moments immanent to each other, as they are part of the same continuum of a phenomenon. However, according to Deleuze, one should not be betrayed by the seeming homogeneity of this quantitative approach. Instead, he argues that the qualitative heterogeneity of sensual, material processes must be conceived as intensive: each process of variation is an open, heterogeneous whole of implicated potentials, which are reduced neither to sensible qualities (as with the Greeks) nor to homogeneous variation (as in modern science). In brief, intensity is heterogeneous without being closed (unlike quality) and quantitative without being homogeneous (unlike extensive quantity).

5.3 Operationalism: pragmatics of notation

Dewey emphasises the importance of *operations* in empirical sciences: experimental procedures, altering the conditions of observation, measurements etc. (Dewey, 1929,

84). Indeed, it is arguably by operations that we can bring forth and interact with the processual and variational character of reality. However, the notion of operationalism was introduced by Bridgman (1927) in the context of physics. Bridgman's aim was to underscore the relevance of concrete operations for scientific concepts. He argued that operational definitions would reduce the concepts' equivocacy. Usually, Bridgman's idea has been interpreted in a semantic context: operations (essentially measurements) constitute and exhaust the meaning or the reference of scientific concepts. In my view however, an epistemological reading of operationalism would be the more fruitful one: our knowledge is primarily operative.

However, it would seem futile to attempt any kind of operational reductionism, where scientific expressions and formulas would be reduced to mere operations devoid of linguistic meaning. Still, I maintain that operations are the primary and most important – and overlooked – form of knowledge. The still dominant propositional model of truth is based on a relatively trivial kind of knowledge, such as recalling isolated facts, which as such is mainly useful in quiz contests, as Deleuze points out. However, even here one could make the case that recalling facts is a certain technique or operation of associating ideas. Indeed, this capacity in itself is undoubtedly vital, but for other reasons than mere fact memorising. In fact, I argue that the irreducibility of the *propositional form* of factual knowledge is the ultimate limit for reducing factual knowledge to operations. That is, factual knowledge does not consist merely of non-linguistic operations, and the propositional form of beliefs and knowledge is essential to their expression. However, I also argue that operations constitute the core of all knowledge, from which its propositional expressions acquire all their purpose and meaning. Furthermore, this concrete nature of knowledge is usually lost whenever one approaches knowledge by its propositional form.

Let us consider the notion of operationalism in the context of mathematics, as there the relevance of concrete operations is not evident. Indeed, mathematics would precisely seem to be an entirely abstract and formal endeavour. This abstractness

of mathematics is illustrated by the fact that all mathematical expressions can be formulated in set theoretical terms, as set-theoretic formulas. Indeed, the notion of operationalism does not imply a denial of the symbolic, syntactic and logical aspects of mathematics and science in general. Rather, I argue that notation enables the externalisation of knowledge, but it is still very strictly bound with concrete operations, and the power of notation lies precisely in its ability to convey these operations. Acknowledging the primacy of operations makes it understandable why mathematical formulas may appear as utter gibberish to laymen, while mathematicians are perfectly at home with them. It is not that mathematicians would be in possession of a secret code that enables them to decipher and to *interpret* the hieroglyphic formulas, but they are simply familiar with the operations which the formulas express in a semiotic form – in this sense, I would suggest that mathematical knowledge is primarily habitual and practical, not symbolic.

Accordingly, I would suggest that mathematics is not the proverbial language of nature, but rather the manual or cook book of nature. The tragedy and paradox of manuals is that their format is *representative*. They name the parts and present pictures of the different stages, and at the most describe them linguistically, but it is difficult to find a manual that would actually teach one how to do or build something. Indeed, one needs to invent the necessary operations oneself or be taught by someone. However, in this respect, free online pedagogical videos are truly revolutionary, as one is precisely able to see the relevant operations in action, without the mediation of written sentences or static images.

But what is the relation between concrete operations and theoretical knowledge? Once again, Spinozan parallelism is useful in analysing the nature and locus of these operations. As we saw in Section 1.8, Spinozan parallelism takes it as an axiom that all mental changes always correspond to physical changes. The gist of this idea is that all knowledge is concrete, i.e. when you learn something, your body (including your brain) is altered in some way – the body also learns. Thus, there

are no merely mental or bodily operations, but all mental operations are always also bodily operations and all bodily operations are always also mental operations, albeit not necessarily conscious ones in either case.

Furthermore, with regard to the semiotic expressions of epistemological operations, with Deleuze and Guattari, we can extend this parallelism to language, in terms of machinic assemblages of bodies on the one hand, and collective assemblages of enunciation on the other. However, here the distinction is not made simply between words and things, but between expression and content, according to the Deleuzo-Guattarian theory of double articulation, which we discussed in Subsection 2.7.1. Furthermore, I would argue that operationalism is an important part of what Deleuze and Guattari term 'nomad science', while 'royal science' can be distinguished from it by its representationalism and general, homogeneous structures. We will elaborate these concepts of nomad science and royal science in Section 5.8.[2]

5.4 Experimenting and intervening

The 1980s saw the emergence of several pragmatistically inspired philosophies of science, particularly from Stanford University, such as Nancy Cartwright and Ian Hacking, but notably also Bas van Fraassen. These analyses involved the common features of undermining the importance of theory in favour of scientific practices and experiments. They also emphasised the importance of causality instead of laws of nature.

For instance, for Cartwright the reality of a theoretical entity is attested to by its causal relations observable in experiments:

> Whether one ought to believe in a theoretical entity depends on whether one can associate with the entity an explanatory causal regularity of the

[2] Ultimately, however, Deleuze and Guattari argue that the parallelism of content and expression dissolves into a single process of becoming, where expression and content are indistinguishable (MP, 637–38).

> sort that we can independently access through a controlled experiment. (Vickers, 2014, 390)

Ian Hacking has embraced a similar kind of pragmatist philosophy of science. However, he refuses to be called a pragmatist, but I think one can dispense with the incongruity by defining pragmatism in terms of operationality, as I have suggested. Hacking has famously defined reality in very pragmatist, experimental terms: 'if you can spray them, then they're real' (Vickers, 2014, 407). Hacking also emphasises the importance of *intervention* in scientific experiments in contrast to the traditional ideal of neutral observation. That is, it is by intricate operations that one gets literally in touch with reality, not merely by opening one's eyes or even by peering through a micro- or telescope.

> Philosophers of science constantly discuss theories and representation of reality, but say almost nothing about experiment, technology, or the use of knowledge to alter the world. This is odd, because 'experimental method' used to be just another name for scientific method. (Hacking, 1983, 149)

Hacking also formulates an important distinction between a representationalist and an interventionist, or as I would put it, *affective* notion of reality:

> Maybe there are two quite distinct mythical origins of the idea of 'reality'. One is the reality of representation, the other, the idea of what affects us and what we can affect. Scientific realism is commonly discussed under the heading of representation. Let us now discuss it under the heading of intervention. My conclusion is obvious, even trifling. We shall count as real what we can use to intervene in the world to affect something else, or what the world can use to affect us. Reality as intervention does not even begin to mesh with reality as representation

> until modern science. Natural science since the seventeenth century has been the adventure of the interlocking of representing and intervening. It is time that philosophy caught up to three centuries of our own past. (Hacking, 1983, 146)

As an example, Hacking points out that the science of thermodynamics was a product of technological and scientific experimentation with the steam engine (Hacking, 1983, 162–64). Hacking argues for a pluralistic view with regard to theories and experimentation, implying that there is no pre-given hierarchy between theory, experimentation and technology. However, I would argue that we need to broaden the scope of 'experimentation' even further as the creative dimension of theory and technology.

The usual assimilation of science with *theory* within philosophy of science is understandable by the fact that the broader significance of scientific experimentation usually seems to be dependent on theory, while a scientific theory is rarely the outcome of pure experimentation. What is passed on through generations is foremost the theory and its implications, while how the theory was arrived at and how it has been tested appear as side notes. Furthermore, the existence of a systematic theory as the context of experimentation is a straightforward basis for distinguishing between scientific experimentation and 'mere' pragmatic trial and error. Still, I would claim that this prevalence of theory is only superficial and that a basic experimentality is essentially involved in all discovery. Furthermore, I argue that a theory is only the expression and articulate formulation of underlying pragmatic and experimental knowledge.

We should adopt from Cartwright and Hacking the idea that knowledge and science essentially involve a kind of intervention, experimentation or active communication with reality – an affective relation. However, I would draw more attention to the operationality and materiality entailed by such communication. Furthermore, Cartwright and Hacking both seem to be obsessed by a kind of problem of realism

– what is real?[3] This would also seem to motivate their interest in causality, which provides them with a kind of touchstone of reality.

But is the question of realism relevant to the activities which involve knowing? It would rather seem to be a relic of the representationalist or correspondence ideal of science as a truthful mirror of reality. In causal realism, the representational truth of theory is replaced by the reality of the entities it discusses, and laws of nature are replaced by 'real causalities'. While these conceptual changes would seem to get at the nature of scientific knowledge more accurately and concretely than the representationalist account, formally speaking, the causal-realist account is still very similar to it and remains in the same framework. Instead, I argue we should look at the ways scientists actually engage with reality, and not at the picture science paints of reality.

Practical skills would seem to illustrate the role of truth and reality for knowledge better than the representational ideal. For instance, continuing with our example of learning to swim, it is difficult to even imagine what could motivate the question of realism or antirealism. Rather, it would seem to be a question of finding the relevant movements and postures and noticing the usual problems (e.g. letting one's legs sink too low). Moreover, the problem is rather to notice the relevant movements and minimise irrelevant ones (usually based on first impressions, like exaggerated movements of the arms). On the other hand, the history of science abounds with examples of postulated entities of dated scientific theories, which are usually considered to be fictional and a mark of the falsity of the theories in question. However, these dated entities are usually of the kind of the *phlogiston*, for which – recalling James's criterion of reality – the problem was that the concept made no

[3] The question of realism also haunts Manuel DeLanda's thinking and his presentation of Deleuze's philosophy. The positive side of DeLanda's approach is the acknowledgement of the seriousness of Deleuze's engagement with the sciences, instead of dismissing them as metaphors. However, I argue that by engaging in this realist–antirealist discourse, he remains within the representationalist framework. That is, one may change the realist criteria of representational truth from Aristotelian categories to those of modern and contemporary science, but one thus still maintains the priority of a linguistic or symbolic formulation of scientific knowledge, just as in Aristotle.

difference with regard to empirical observations, it was not its 'unreality' as such (cf. James, 1916, 48–49). Hence, the categories of relevant and irrelevant, singular and regular seem more important for knowledge than truth and reality.

Finally, reframing Hacking's interventionism in Deleuze and Guattari's terms, causality should be understood in the context of *affectivity* instead of natural laws. I argue that the main difference between these approaches concerns the locus of affects or causal phenomena. In contemporary accounts of causality, causes are practically always seen through the truth-function of the *proposition* expressing the causal relation: thus, causes are analysed in terms of laws, regularities or counterfactual scenarios. By contrast, Deleuze and Guattari define the affect in terms of assemblages and processes of individuation within them. Namely, a machinic assemblage is what determines the affects of its elements, but the affects are always local and material. Nevertheless, with a change in an assemblage, the affects also change, despite the material resemblance of the element in the two consecutive assemblages.[4]

The reference to the machinic assemblage of a particular phenomenon allows us to account for the relatively static and recurrent features of its affects and causal relations, without fixing a particular aspect of reality as universally fundamental. Moreover, we can alleviate the confusion between representation and reality, as representations are according to this perspective treated as effects of the workings of an assemblage and of its affectivity. Accordingly, I argue that the dynamic operations and the affectivity of assemblages are what the notion of 'reality' has always sought to express. Thus, the reality of assemblages, affects etc. does not consist in their corresponding to a representation but in their *functioning* or operating. If we ask 'Is X real?', we are already immersed in linguistic and representational expectations, which ignore the pragmatic dimension of reality, as reality is thus framed as some-

[4] For instance, knives, or more generally cutting blades, involve very different circumstances and kinds of movement depending on whether a knife is used as a tool or as a weapon. With time, this difference in affects is practically always also reflected in the material aspects of the knife (its shape, the metal used etc.).

thing abstract. Indeed, from the pragmatist point of view, the reality of a thing is evident from our interaction with it – we can only question the *nature* of this existence (cf. Peirce, 1878).[5]

5.5 Deleuze on the relation between philosophy and science

Throughout his work, Deleuze actively engages with different scientific domains. However, he also regularly points out that his approach is not scientific. This does not mean denouncing the rigour of philosophical research. Rather, Deleuze is suggesting that sciences contain something real, which is thus not reduced to the symbolic order of a particular science and to the notation of its domain. This would seem to be evident from the fact that scientific theories have concrete effects in the world and it is indeed the condition of their being understandable and useful, instead of being self-contained and isolated from the rest of reality. In economic terms, one could speak of the *externalities* of scientific theories – the accidental side-effects or repercussions of an activity. In a word, Deleuze is claiming that it is possible and meaningful to talk about a scientific theory outside of its own discourse (cf. DR, 4; QP, 204–06).

Secondly, Deleuze also emphasises that one should not confuse different domains with one another. However, Deleuze and Guattari's pronouncements concerning the rhizomatic nature of thought and action have often misled their readers to think that they are advocating a kind of chaotic entropy and anarchism as a *modus operandi* for all spheres of life. Nevertheless, the rhizomatic workings of reality never compromise the individuality of domains. Thus, even if e.g. physicists are *de facto*

[5] We can see that Deleuze and Guattari's theory of affectivity resonates strongly with the pragmatist notion of qualities as *effects of interaction* – this is indeed a possible definition of *affects*. The main difference between Deleuze and the pragmatists would seem to lie in the pragmatist concern with semantics – what words mean – while Deleuze seeks to articulates a real difference between a quality and an affect.

always engaged in other domains as well, and a kind of interdisciplinarity is often a necessary source of innovation within the domain of physics (e.g. engagement with technology and mathematics), there is still a kind of *haecceity* particular to the domain which it maintains throughout these connections. As a result, the same person can be both a physicist and a philosopher, even when discussing a single theme.

Even if different domains are not isolated from one another, this does not mean that they would be mixed up or fused into an undifferentiated whole either. But I argue that within these conditions, it is possible to employ scientific notions in a rigorous way outside their scientific context. Namely, one has to create a corresponding concept in another domain. Briefly, according to Deleuze and Guattari, it is a matter of different kinds of creation: a scientist creates functions, while a philosopher creates concepts. Thus, there can be both a scientific notion and a philosophical concept of light which are both rigorous, albeit not from the point of view of the other domain. Namely, a scientific function has different criteria, components and conditions than a philosophical concept.

Smith and Protevi summarise Deleuze's theory of the difference between philosophy and science thus:

> Philosophy gives consistency to the virtual, mapping the forces composing a system as pure potentials, what the system is capable of. Meanwhile, science gives it reference, determining the conditions by which systems behave the way they actually do. Philosophy is the 'counter-effectuation of the event,' abstracting an event or change of pattern from bodies and states of affairs and thereby laying out the transformative potentials inherent in things, the roads not taken that coexist as compossibles or as inclusive disjunctions (differentiation, in the terms of *Difference and Repetition*), while science tracks the actualization of the virtual, explaining why this one road was chosen in a divergent se-

> ries or exclusive disjunction (differenciation, according to *Difference and Repetition*). (Smith and Protevi, 2018)

Thus, the difference between science and philosophy would not consist in the object of research but in their different manners of approaching reality and consequently, in their respective creations. Namely, philosophy creates *concepts* by which it seeks to convey and express the 'infinite movements' and 'pure potentials' of reality, making them *conceivable*. On the other hand, science creates *functions*, which map a phenomenon onto a 'plane of reference', mimicking the processes of actualisation and explication (QP, 111–13). Thus, we can with von Wright and Dilthey characterise the fundamental aim of science as 'explanation' or explication, albeit with a slightly different reading of the notion: it is as if science folds out (unfolds, explicates, explains, develops) the potentials of reality, seeking to represent its mechanism of actualisation in (finite) space and time (cf. von Wright, 1971; Dilthey, 1922). In fact, Russell also stresses the importance of functions for science instead of causal relations, and sees the latter as a 'relic of a bygone age' (Russell, 1919, 180; von Wright, 1971, 35–37). Deleuze and Guattari affirm the centrality of functions to the *product or creation* of the natural sciences. However, according to them, functions do not account for the experimental procedures which motivate and give rise to them. I argue that these experimental processes are best grasped by the concept of affectivity, which would thus replace the concept of causality, as I will argue below.

In *What is philosophy?* Deleuze and Guattari thus set science clearly apart from philosophy. DeLanda is critical of this gesture as it would seem to compromise Deleuze's earlier, closer engagement with science, and according to DeLanda, makes their account of natural sciences stereotypical and essentialist (DeLanda, 2002, 178–80). Indeed, in *Difference and Repetition*, Deleuze stresses the 'ideal dialectics' common to philosophy and the sciences, with regard to which philosophy and science (and potentially also art) become indiscernible (DR, 212–13). DeLanda also stresses the importance of Deleuze and Guattari's earlier distinction between royal and minor

sciences as an expression of the heterogeneous multiplicities of all scientific domains: royal science refers to the more established and prestigious branches of sciences, manifested e.g. as axiomatics, while minor sciences are concerned with *problematics* – emerging fields of research and phenomena which are perhaps not even clearly defined yet and for which a complete method of solution does not yet exist.

However, first of all, the Deleuzean notion of ideas as the common object of these different domains is still present in *What is philosophy?* as the chaos in which cerebral activities plunge, or as 'unthinking thought' (QP, 206). Here we can remember the theme of the awakening of thought from *Difference and Repetition*, where thinking is spurred on by an intensive sensation, leading to the positing of a problem (DR, 187–92). In this earlier work, Deleuze equates ideas with problems, which are thus not only the object of thought but also its virtual source, signalled by an intensity. Accordingly, I argue that problematic ideas are precisely the 'unthinking thoughts' awoken by disruptive sensations.

The heterogeneity of the sciences is also still present in *What is philosophy?*, even if the 'task of science' as the creation of functions appears foremost as a unitary venture.[6] Furthermore, I think DeLanda is supposing the engagement with science to be a clear-cut case, as if one had to either completely endorse the scientific paradigm as the ultimate discourse on reality or else relativise it as having no privileged relation to reality. According to this line of reasoning, if one speaks of science, one is committed to the orthodoxy and consensus of the associated domain. On the other hand, if one claims that the nature of philosophical activities differ in essence from scientific inquiry, one purportedly dissolves all communication between the two domains. But this line of thought is a case of *petitio principii*: it simply denies Deleuze's supposition that one can engage with reality in fundamentally different ways, without the objects of these engagements being exclusively

[6] DeLanda misrepresents the role of set theory for Deleuze and Guattari: I argue that set theory is not 'the tool which constitutes the plane of reference of science', but it is simply *a* tool in this endeavour, a further attempt at formal systematisation (cf. DeLanda, 2002, 179; QP, 113–14).

tied to particular domains. Deleuze is clearly impressed by the inventions of scientists investigating reality, but he accords perhaps more attention to artistic and philosophical engagements with reality as more properly creative enterprises. This would seem to be because in philosophy and especially in art the creations are to a lesser degree covered over by representations associated with the creations and inventions. Indeed, within both philosophy and art, enduring representations are better known as *clichés*, while in science there is no such thing, as an established scientific representation is called *truth*.

5.6 Intensive materiality and technics

So far in this chapter, we have seen that pragmatist philosophy of science provides us with several tools to fathom the technical and machinic aspects of science and knowledge. However, it offers no discussion of the *materiality* of knowledge, which is arguably an indispensable element of technical knowledge as well as of all other knowledge. In the remainder of the chapter, we will consider the aspects of materiality important for technical knowledge, and I will demonstrate their essentially intensive character.

As we saw in Part I, intensity qualifies the immediate nature of the sensible and the immediate materiality of experience as process and variation. In Deleuze's analysis, processes and variations are foremost distinguished ordinally, by an order of degrees. The degrees constitute different intensities of the total range of processuality or variety. Intensive quantity admits only order and different degrees defined in relation to a degree zero. However, there is an irreducible empirical element – *haecceity* if you like – in an intensive quantity, which can only be experienced and named, for instance heat. Still, this haecceity is complex, so that a particular degree of heat implicates all the other degrees and most importantly, its degree zero. Intensity refers to the dimension of intrinsic or internal variation within phenomena.

For Deleuze, this dimension consists of 'potentials', as the particular intensity always implicates a 'fall', i.e. its difference or distance from a degree zero. As Russell suggests, there are infinitely many, qualitatively different intensive zeroes (Russell, 1938, §172–77). Consequently, one cannot reduce an intensive quantity to its degree and order, as an intensive quantity does not indicate an extensive measure but presupposes and implicates a particular empirical zero and a range of variation. For instance, having zero pain or zero warmth (intensive quantities) are very different sensations, while the state of having zero apples in one's basket and the state of having zero oranges in one's basket (extensive quantities) very much resemble one another.

Intensive quantities are what we perceive immediately, but they also seem to evade perception. For Deleuze, perceiving consists in the constant cancelling of intensive quantity and potential (which, however, are not exhausted as long as we keep perceiving and events keep happening). We can appreciate the inevitability of this fact at night, when we are in need of constant generation of artificial light in order to be able to see anything. Namely, the production of light requires the cancellation of energetic potentials, first in transforming energy (kinetic, solar or usually energy stored in nature) into a usable form and then in letting this electric potential further discharge in a light source. Incidentally, these processes are all combined in the making of fire, the proto- or 'architechnic' form of harnessing energy.

There is an immensity of potential by which 'the given is given', or briefly, by which *things happen*. However, although all potential is quantitative and physical in a sense, potentiality should not be reduced to its physical and energetic instantiations in the usual sense. Namely, our technical, symbolic and artistic potentials are perfectly real, but it would be pointless to try to express them merely in physical, chemical, biological or even neurological terms. The term 'potential' has a relatively rigorous (although multiple) use in physics, but I argue that its employment in other contexts – e.g. art – implies only a *structural* identity or isomorphism, not subordi-

nating art to physics. As I have already argued, the fact that a particular scientific notion can be learnt or understood already entails that it is not exclusively scientific and reduced to its theoretical formulation.

From the point of view of technics, the relevance of this intensive potential lies in the range of variation of a material and its affectivity. Namely, I argue that technics as experimentation is what brings forth the different intensities of a material variation. Indeed, this 'bringing forth of intensities' is also close to the definition of *affectivity*. Namely, in addition to the immediate nature of sensation, intensity characterises the affective or expressive aspect of material variations. In conformity with the general nature of intensity, affects are immediate manifestations of material variations, but in addition, they express the operative nature of the material. That is, affects or expressive traits are manifested in interaction with the material, such as hardness, colour, polishedness and the figures resulting from crystallisation of steel for instance (MP, 505). Indeed, affectivity is the privileged expression of Deleuzean intensive technics, as it combines the immediacy of intensity with the operationality essential for technics. We have also seen that the affects of tools and weapons are the expression of the nature of technical assemblages. In what follows, we will acquire a more detailed view of Deleuze and Guattari's theory of materiality, its intensive aspects, as well as its significance for technics.

5.7 Matter and material knowing

For Deleuze and Guattari, matter consists of free dynamisms that are not yet or anymore caught in limited, recurring processes, territorial or stratified. This characterisation of matter could still be understood in classical, Aristotelian terms, but Deleuze and Guattari underline that matter is not undifferentiated nor chaotic: its intrinsic mode of being appears as intensities and singularities. Also, matter is for them essentially a context, interface or inter-surface for machinic processes, ex-

pressed as intensities and singularities. They assimilate this reference point with deterritorialisation, as matter usually exists as stratified and territorialised forms and substances, contents and expressions. Indeed, pure matter (e.g. pure iron) cannot be found directly, but it must be extracted and laboured over (for instance smelted) before it can be given a particular form.

> The term 'matter' was used for the plane of consistency or the Body without Organs, in other words, the unformed, unorganised, nonstratified, or destratified body and all that flowed on such a body, submolecular and subatomic particles, pure intensities, prephysical and prevital free singularities. (MP, 58)

As I have suggested above, it would seem that science involves an irreducible technico-material element. Namely, science involves knowledge of concrete operations which permit it to manipulate material processes. Intensity, on the other hand, characterises the nature of material processes. In a nutshell, I argue that the nature of knowledge and science should be understood as a kind of technics: it is a multitude of operational skills. Moreover, these operational skills connect immediately to material processes. Material processes, however, appear immediately as intensive affects. Affectivity consists in the kinds of actions and effects a body can receive and produce. Intensity consists in the variation of this affectivity, its gradients and thresholds – its 'latitude'. Affectivity thus possesses an intensive structure or logic.

Thus, firstly, the nature of materiality is essentially intensive and affective. Secondly, an account of intensity and affectivity permits us to understand the material nature of knowing and science as a kind of technicity. In the following sections, we will look at the nature of materiality in terms of technics as material knowledge.

5.8 Singularities, affects and material knowledge

For Deleuze and Guattari, material knowledge concerns intensive affects and singularities. However, my general argument in this Part II is that intensity is the primary character of the immediate knowledge of matter and of interaction with it. Thus, even if Deleuze and Guattari present the intensive, expressive traits and singularities in parallel, I argue that the singularities are encountered via intensities – they account for the immediate nature of the interaction.

According to Deleuze and Guattari, singularities are distinctive points or moments which constitute the structure or rhythm of a material or phenomenon. Singularities are:

> [...] implicit forms, topological rather than geometric [...] for example, the variable undulations and torsions of the fibres guiding the operation of splitting wood [*refente à coins*]. On the other hand, to the essential properties of the matter deriving from the formal essence we must add *variable intensive affects*, now resulting from the operation, now on the contrary making it possible: for example, wood that is more or less porous, more or less elastic and resistant. (MP, 508)

Singularities are the intrinsic structure of material variation or of the dynamics of a phenomenon, while the material expressive traits or affects are akin to qualities or dispositions of matter (or of a phenomenon as a process in variation). The expression 'more or less' indicates the essential intensive nature of these affective qualities and its character of variation, manifest as a range of degrees.

Let us return to our example of singularities as the temperatures of the phase transitions of a substance, e.g. water or iron – melting–freezing, vaporisation–condensation. However, as we saw with our other example of learning to swim, the learning process is a more relevant manifestation of the role of singularities: according to Deleuze, learning consists in adapting one's own singular points to those

of other bodies. Accordingly, in learning to swim one must conjugate the relevant points of one's body with the relevant points of water.

> Learning to swim or learning a foreign language means composing the singular points of one's own body or one's own language with those of another shape or element, which tears us apart but also propels us into a hitherto unknown and unheard-of world of problems. (DR, 248/192)

The first characteristic of a singularity is that it is distinguished from ordinary or regular points. Learning to swim requires the coordination of a relatively small number of bodily gestures, not the reconfiguration of all bodily movements, but only a few important ones. It would seem that ultimately, intellectual and practical learning both also require this kind of adjustment of our bodies – in the case of learning to swim or to ride a bicycle the need of this bodily readjustment is simply more obvious.

Similarly, water changes its behaviour radically only at very precise degrees of temperature. That is, between the melting point and the boiling point, water behaves like a liquid, and more heat gradually generates more thermal movement of the water molecules and more evaporation of a small number of molecules. Still, at the boiling point, the global state of the system changes radically. However, as with learning to swim, from the point of view of technics, the important question is how these singularities can be combined with something else, for instance a steam engine and a locomotive, each with their own characteristic singularities.

The second characteristic of singularities is that they are *virtual points*. That is, a singularity is not reduced to an actual point in space and time, but it functions as a kind of organising principle. DeLanda assimilates singularities with the attractors of dynamical systems theory. An attractor is a point or a 'recurrent topological feature' which seems to direct the course of the phenomenon – or the trajectories of the system – even if a trajectory never reaches the state which corresponds to the attractor; this state is essentially virtual (DeLanda, 2002, 15–16). Similarly, a

singularity can also be thought of as a virtual threshold corresponding to a change in the phenomenon, even if he threshold cannot be actually determined.[7] However, even if singularities are in themselves virtual, they do appear in phenomena. I argue that their mode of appearance is precisely intensive: they are experienced in the continuous variation of the flow of experience as remarkable points or moments, marking a particular intensity within a range of variation.

Thirdly, as virtual entities, singularities correspond to relations of variation between virtual elements or factors (differentials), as we saw in Part I. That is, phenomena are constituted by disjunctions of diverse virtual elements, and singularities are the defining features of these relations. Thus, in addition to the first characteristic – singularities as defining moments in a variation – the distribution of the singularities is furthermore determined by relations between virtual elements. For instance, from the societal point of view of the Marxist theory of economic production, labour and capital would be such elements that determine economic productivity. They are virtual in the sense that if one considers them individually, they cannot account for economic production, and if one considers their actual interplay in an economy, one cannot isolate their effects. Still, they can be distinguished conceptually and theoretically. What is intensive in this case is the variation of economic production, and the relations of labour and capital (virtually) determine the nature of this variation as well as the definitive changes or thresholds in the modes of production.

So far, we have emphasised the intensive and affective nature of material knowledge or technics. However, we must consider Deleuze and Guattari's claim concerning the difference in nature between material singularities and intensive affects. Namely, even if matter is immediately encountered as intensive and affective, the technical knowledge concerning it is based on a confrontation with singularities and on manipulating them. Thus, singularities are immediately expressed in the inten-

[7] From a pedagogical point of view, this feature of virtual singularities provides a possible explanation for the usefulness of heuristic aids, which permit one to cross a virtual threshold or singularity and to learn a skill or to gain an understanding without really knowing how, and in fact while focusing on something else than the goal to be attained.

sive mode, but they are not reduced to these immediate expressions. Singularities and affects complement each other, while constituting separate dimensions of matter. Thus, for instance, the varying porous character of wood always corresponds to certain singularities crucial to working on it.

Why not simply talk about qualities or dispositions instead of expressive traits or affects? As to qualities, affects and material traits pertain foremost to the interaction with the material, instead of perception and representation. As Deleuze and Guattari note, this interaction can proceed to both directions: the affect can appear as a result of an operation or as a feature of the material which makes the operation possible. Also, the qualities involved in affects vary within a range of degrees; the affective trait is not absolute or unchangeable.

We examined the concept of disposition earlier in Subsection 1.8.6, in the context of Spinoza's philosophy, and we can deepen our analysis here from the point of view of material, technical knowledge. The concept of disposition clearly seeks to single out something along the lines of the Deleuzean affect. That is, a disposition is one of the cases of what Aristotle calls 'potency' (*δύναμις*), in the sense of the capacity for being affected (Aristotle, 1961, 1019a). For instance, the solubility of sugar in water would seem a palpable example: it would seem intuitive that the sugar cube does possess this property even if it is manifest only in particular circumstances (when immersed in water). For Deleuze, individuals are defined primarily by these kinds of dispositions or *affects*, which do not express their form or appearance, but their dynamic dimension – what they are capable of. However, we must acknowledge two problems in the notion of disposition as usually conceived. (1) Instead of being a predicative property or quality, the affect-disposition is an 'affective quality' or 'a material trait of expression', which manifests a *power* characteristic of the individual. (2) The affect is a concrete mode of being of the individual, and from this point of view the linguistic, conditional formulations for dispositions (e.g. 'if the sugar cube is immersed in water, it always dissolves'), which express some sort of pseudo-

laws of nature, should be regarded merely as heuristic expressions. The affect is precisely something that is immediately sensed in interaction with matter, not a conscious representation of possible states of affairs or laws of nature. This is also the gist of the Deleuzean distinction between *nomos* and *law* (or *logos*): a law is a general prescription for phenomena, while *nomos* refers to the local behaviour of a phenomenon, its concrete manner of occupying space.

One must thus bear in mind that the affect as a disposition must be understood as an expression of concrete interaction involving an operation and a material. However, more often than not, the doctrine of disposition has been deployed in a linguistic register, very foreign to Deleuze and Guattari's materialistic approach. Thus, while the disposition is often analysed as a logico-linguistic category expressing a special quality or a hypothetical sequence of events etc., the Deleuzo-Guattarian affective traits are meant to pinpoint dynamic aspects of concrete experience.

Intensive traits of technological strata

How are the singularities and affects deployed in Deleuze and Guattari's analysis of technology? Here we must first look at their analysis of technology as an anthropomorphic stratum. In *A Thousand Plateaus*, Deleuze and Guattari distinguish between content and expression, seeking to sidestep the classical (Aristotelian) hylomorphic opposition between form and matter. According to Deleuze and Guattari, the connection between form and matter is extrinsic, while content and expression are complementary aspects of experience, both immanent to it. Furthermore, content and expression both entail a matter and a form specific to them. As we saw in Section 2.7, Deleuze and Guattari define the anthropomorphic strata and their expression and content by semiotics and technics, based on Leroi-Gourhan's analyses of the development of manual technics and facial expressivity in human prehistory:

> The form of content becomes alloplastic, operating modifications of the outside world. The form of expression becomes linguistic and and no

> longer genetic, operating by symbols that are comprehensible, transmissible and modifiable from the outside. The properties of man – technology and language, tools and symbols, the free hand and the soft larynx, 'gesture and speech' – are more like properties of this new distribution. [...] On the basis of Leroi-Gourhan's analyses, we can see how contents are linked to the pair hand-tool, and expressions to the pair face-language. (MP, 79)

The hand is here considered a *coding*, a dynamic formation, 'manual form or manual formal traits'.

> The hand as the general form of content is extended [*se prolonge*] by tools that are themselves forms in action, implying substances as formed matters; finally, products are formed matters or substances, which serve as tools in their turn (MP, 79).

Thus, the hand is a general organising, formal principle relative to the (technical) content of anthropomorphic strata. However, Deleuze and Guattari underline the ultimate intricacy of content and expression with their respective forms and materials. For instance, they describe the singularities of a material in nomadic technology as constituting its *form of content*, and the pertinent traits of expression as constituting a *matter of expression* (MP, 457, 499, 505–06). Deleuze and Guattari define singularities as the intrinsic structure of a material substance. Matter is not primarily a formless, homogeneous mass on which a form can be imposed, but intrinsically structured by its singularities. Furthermore, matter manifests 'pertinent traits' or *intensive, variable affects* (MP, 508).

The point here is that ultimately, content and expression are relative terms that indicate the manifold bifurcations of a domain of phenomena into ordered elements (content) and invariant structural features (expression). Furthermore, *stratification* is the name for a stabilising tendency which establishes certain processes as relatively

stable expressions and contents, and as the corresponding forms and matters, which are reflected as stable elements in our representations. For instance, the prison (a form of content) is a case of confinement (power formation), accompanied by concepts and enunciations (forms of expression) relative to delinquency, which is part of a larger system of signs. (MP, 86)

However, in the context of transformation or creativity, these distinctions become more fluid, and content and expression with their forms and matters are deterritorialised and destratified – they become mere 'traits'. Thus, Deleuze and Guattari speak of a deterritorialised matter both as an expressive 'incorporeal power' and as a content-like 'limitless corporality', which manifests 'incorporeal potency [*puissance*] of this intense matter and material potency of this language' (MP, 138). Thus, depending on the context, 'matter of expression' may relate both to the 'vocal material' of language as well as to the 'expressive traits' or affects of nomadic technology and art. Indeed, just as the technical content possesses its own organisation (form, coding), the semiotic or 'signal' expression is based on an expressive material.

Furthermore, as content and expression are taken up in a creative process, the technical material becomes expressive and artistic (or the distinction between technics and art becomes less clear). In this respect, Deleuze and Guattari distinguish between *royal science* and *nomad science* (MP, 456–57, 621). Royal science conforms to the state apparatus and strengthens its mode of organisation and its division of society into those who govern and those who are governed, to intellectuals and manual workers.[8] Furthermore, this social scheme is hylomorphic in that it identifies the governors with *form* and the workers with matter, the intellectual elite with generalisable theory and the mass of workers with its practical and technical appli-

[8] Naturally, in the contemporary world with its ever-growing digitalisation and automatisation, it would seem that manual work plays a smaller role and consequently, the qualitative difference between the work of the elite and that of the masses of a particular society is not great. However, it would also seem that the qualitative difference is maintained at a global level, where Western countries are 'cyber-intensive' or focused on immaterial work, and manual work and basic production is carried out in poorer countries or by immigrants from those countries.

cation. By contrast, the experimental nomadic science approaches matter through its singularities and it is expressed as material affects, not theoretical generalities.

5.9 The philosopher's metal: metallurgy as intuition of inorganic life

Technical elements and machines are for Deleuze and Guattari essentially parts of particular social assemblages, which determine their nature and affects. The sedentary state apparatus is an emblematically restrictive and relatively closed assemblage, while the nomadic war machine is the model of a transformative and deterritorialising assemblage. We have already discussed the ambiguous nature of the war machine as a creative but also potentially violent tendency. However, from the technological point of view, Deleuze and Guattari's point is not to equate war with technics, but to underline the nomadic origins of many technical inventions, especially of *metallurgy*.

According to the archaeologist Gordon Childe, metallurgists were the first specialised artisans. This is because their work required a full-time contribution, and this was made possible by the surplus of agricultural production available in the society (Childe, 2009, 78; cf. MP, 513). Deleuze and Guattari characterise artisans by their mobility and itinerancy. According to them, artisans essentially 'follow the flow-matter as pure productivity' (MP, 512). Now, this following of the flow of matter bears the two senses of seeking the material necessary for artisanal production as well as finding the singularities within the material (MP, 461, 509). However, despite the nomadic origins of metallurgy, Deleuze and Guattari do not simply define metallurgy as a purely nomadic practice but emphasise its *rhizomatic* character as a versatile activity. That is, metallurgy has its more nomadic figure in the *prospector* of minerals and of ore deposits, but also its more sedentary figure of the *smith* (MP, 517). Still, I argue that this qualification is essentially due to the social position

of the metallurgist rather than metallurgy as an activity, as the creativity related to metallurgy possesses a properly nomadic character as openness to material variations. Namely, Deleuze and Guattari also claim that 'metallurgy constitutes in itself a flow necessarily confluent with nomadism [*qui concourt nécessairement avec le nomadisme*]' (MP, 502/404).

Thus, despite the ambivalent, amalgamate nature of the metallurgist, Deleuze and Guattari present metallurgy as tracing a nomadic space by following material flows or 'movement-matter' and their singularities. In fact, I argue that their discussion of metallurgy is essentially a continuation and development of Bergson's thoughts concerning the tension between materiality and thinking, even if they only allude to this in passing (see MP, 462–64, 507, 623). That is, Bergson articulates approximately the following problem in *Matter and Memory* and *Creative Evolution*: how can the universe be simultaneously considered as a single process and also as manifesting diverging lines of development which produce clearly distinguishable, different modes of being? The universe has bifurcated e.g. into matter and life, life into plant and animal life, animal life into instinctual and intelligent life. Bergson points out that while these lines of development all manifest aspects specific to them, they also interact with each other and remain subject to certain contingencies of their ancestral forms. Furthermore, a species can also regress to a stage resembling a more ancient one. Bergson's term for this movement or thrust of life is the famous *élan vital*, which, however, does not entail any magical notions, but simply pinpoints the immanence of the bifurcated vital processes.

I suggested earlier in Section 2.5 that the phylum as movement-matter and *inorganic life* are Deleuze's responses to Bergson's *élan vital*, the vital movement or thrust of life. Namely, even though Bergson leaves a door open for monism in *Creative Evolution*, he does present life and matter as opposing forces, *l'élan vital* driving forth precisely life, trying to overcome the limitations of matter, which thus appears as a counterforce to life. Indeed, Deleuze takes the immanence of the uni-

verse seriously and develops the idea of inorganic life, according to which life cannot be reduced to organisms. To put this idea simply, life needs to be defined in inorganic terms if it is to account for the following facts: (1) organic life has emerged from inorganic processes, (2) organic processes still involve many inorganic processes and substances, (3) technics would seem to continue the phylogenetic process of life ever further beyond organic life.

Indeed, technics would seem a plausible candidate for the development of life beyond the confines of the organism. This is also the interpretation of Leroi-Gourhan, who alludes to a Bergsonian impetus (*élan*) in the development of technology, which he calls a 'universal tendency'. However, he situates this tendency at the intersection between human mental tendencies ('internal milieu') and the environment ('external milieu'). (Leroi-Gourhan, 1974 [1945], 336–40; cf. MP, 338–39)

> The tendency which, by its universal nature, contains all the possibilities which are expressible as general laws, traverses the internal milieu, bathed in the mental traditions of each human group; it thus acquires particular properties, as a ray of light does by traversing different bodies with diverse properties. It encounters the external milieu, which offers an irregular penetration to these acquired properties, and at the point of contact between the internal milieu and the external milieu, this film of objects constituting the human furniture is materialised. (Leroi-Gourhan (1974 [1945], 339), transl. JT)

Deleuze and Guattari emphasise that *assemblages* and the *phylum* exist as two inseparable poles in technical evolution: 'the machinic phylum in variation creates the technical assemblages, while the assemblages invent the variable phyla' (MP, 507). However, Deleuze and Guattari characterise the operation of the phylum (in variation) as 'subterranean', visible only in the long term lineage of technological invention, while particular technological inventions (variable phyla) are determined

by the needs and desires of each concrete assemblage in question. Thus, their subterranean 'phylum in variation' corresponds to Leroi-Gourhan's technical evolution, while assemblages account for both the internal and external milieus as manifestations of desire and its embodied configuration.[9]

But what exactly has metallurgy got to do with the cosmic process of life, organic or inorganic? First of all, according to Deleuze and Guattari, metal is the prime material expression of inorganic life. Namely, of things material, metals are the most prone to renewed variation and reaction with other materials. According to Deleuze and Guattari, metallurgy is 'the consciousness or the thought of flow-matter and metal is the correlate of this consciousness'. They add that 'thought does not arise so much with stone as with metal'. Deleuze and Guattari also characterise metal as a *body without organs*, as it manifests the 'immanent potency of corporeality in all matter'. This means that metal as an organless body is an emblematic support of inorganic life. Furthermore, metallurgy follows and studies these inorganic variations in immediate interaction with the material. In this respect, Deleuze and Guattari also speak of an 'esprit de corps' proper to metal, referring to an immediate consciousness of material variations.[10] (MP, 512)

For Deleuze and Guattari, the deployment of inorganic life is essentially *machinic* – developing heterogeneous compositions in variation. While a metal does not in itself make a machine, metals nonetheless endure processes which an organism cannot support, enabling further machinic compositions. More importantly however, it is technology and metallurgy that bring this malleability and variability of metal forth and make it manifest. Indeed, Deleuze and Guattari's description of metal-

[9] The internal and external tendencies are both also present in the phylum, but in a different sense: the phylum responds to the (internal) needs of an assemblage, but it also represents a material *external* to the assemblage, *within* which, however, the technical inventions are to be found. I would suggest that in the phylum, the internal and external appear as molecularly intertwined, while in the assemblage they are separate, molar categories.

[10] In accordance with its usual sense, 'esprit de corps' refers to a kind of 'team spirit', but more importantly to an *incorporeal* dimension of a body. Furthermore, Deleuze and Guattari combine these two aspects by evoking the multiple processes, herds or packs that occupy the body without organs. (MP, 453–55; 44)

lurgy as the consciousness or intuition of matter refers again to Bergson's idea of consciousness as a kind of concrete, vital function. (MP, 509, 512) Moreover, for Bergson, human intelligence is bifurcated into two faculties: intelligence proper and intuition. Intelligence is a generalising faculty based on the structure of space, with geometry as its purest expression, while intuition is the faculty of following duration. According to Bergson, intelligence is responsible for the scientific and technical successes of humankind, as the key goal of intelligence is the manipulation of our spatial, material environment. However, the price of these successes is a kind of estrangement from the movement of life, which is essentially temporal in character and the deployment of duration as such. As examples of this myopia with regard to vital processes themselves, Bergson cites the slow progress in hygiene and pedagogy in the scientifically and technologically developed society of his time. (Bergson, 2007 [1907], 166) The point is not whether science and technology could solve these problems, but that the 'intellectual', scientific mindset is not sensitive to the immediate urgency of these problems (deplorable hygienic conditions and harsh, unloving treatment of children).

On the other hand, intuition is according to Bergson in a more immediate connection with vital processes, as intuition takes duration and the *élan vital* as its objects and seeks to follow their unfolding in time.[11] But if we are in possession of such a faculty which is truthful to the process of life itself, why do we not simply use it constantly? According to Bergson, it is the usefulness of *generalisations* characteristic of intelligence and conducive to the manipulation of matter that has made intelligence dominant in human beings. Indeed, even if intuition is more in tune with the movement of life itself, it is an utterly local and limited faculty, not capable of extrapolating far beyond the close surroundings of the individual. (Bergson, 2007 [1907], 176–179)

[11] As examples here, one can think of meditation and mindfulness, where a crucial aspect is to simply be present with and aware of one's bodily sensations, one's breathing, muscular tension etc., all closely connected to vital processes. However, just as with the Bergsonian intuition, this awareness can also be applied to any outwardly directed activity.

However, Deleuze's take on the problem of intuition is more intricate. For him also, intuition is a kind of immediate knowledge or consciousness following the minute variations of reality. Nevertheless, he parts ways with Bergson in relation to the *object* of intuition. Indeed, Bergson often equates matter with space and defines intelligence as a kind of reaction of life to matter, and consequently intelligence also conforms to the laws of spatial matter. By contrast, as we have seen, Deleuze expands life to also cover material processes and indeed, intuition is for him the cognitive faculty able to follow their intricate variations. Thus, for Deleuze, there is a world of material variations beyond the general laws discovered by intelligence.

I argue that for Deleuze and Guattari, *strata* are the correlates of intelligence and representative knowledge in each domain of reality. As we saw earlier in Subsection 2.7.1, despite the intuitively spatial character of strata, the defining character of a stratum is not the spatiality of Bergsonian intelligence but a *relatively invariant organisation* (expression) of an *ordered series of elements* (content). Indeed, according to Deleuze and Guattari, representational intelligence does not perceive the variation of a phenomenon but on the contrary its invariant structure. This capacity makes it useful in organising phenomena, but also indelicate and incapable of development without the help of intuition.

Chapter 6

Social machines and technics

We will now focus on the social role of machines, as well as on the nature of technological assemblages. We will also explore the relation between machines and technics in greater detail. Let us recall the key aspects of machines, as presented in Section 2.9. First, Deleuze and Guattari's concept of machine can be defined as an *operating principle of an assemblage in variation*. This variation is driven by a process of deterritorialisation, leading to ever new assemblages. The *plane of consistency* is the virtual terminus of this transformative process, consisting essentially in the free communication and interaction of heterogeneous elements. Finally, the mode of operation of machinic assemblages is essentially *affective*, expressing its capacity for receiving and producing affections. Deleuze and Guattari contrast this affective perspective with an organic point of view, which focuses on the internal structure and nature of a being.

First, in *Anti-Oedipus*, a *social machine* is the dominant social formation in a given society, for instance, territorial organisation in primitive societies, despotic overcoding in archaic societies and capitalistic axiomatisation in modern societies. However, in *A Thousand Plateaus*, Deleuze and Guattari conceptualise social machines and other social formations as different kinds of assemblages. In particular, Deleuze and Guattari analyse the role of the *state apparatus*, which they argue all

social machines have already reacted to in times where nothing resembling the modern state existed yet. Thus, the state apparatus should not be simply equated with the modern state institution and its concrete forms or 'models of realisation', although existing states usually perform some of the functions of the state apparatus. For instance, in simplistic neoliberal or libertarian discourse, markets and the state are habitually opposed to one another ('the state distorts the functioning of the market'), while Deleuze and Guattari precisely argue that the state apparatus is essentially a function of capitalist society and that capitalism also interiorises several aspects of the state apparatus.

Second, we will analyse the nature of machines in the ordinary sense, which Deleuze and Guattari refer to as 'technical machines'. Furthermore, they refer to the parts of machines as 'technical elements'. According to them, the existence and nature of technical machines are determined by the social machine. However, we must further specify the sense of this 'determination', as it refers to no kind of technological determinism; rather, technical objects can only be understood as part of a particular social setting. Following Marx, Deleuze and Guattari describe technical machines as 'indices', indicating or implying the social machine they belong to. However, Deleuze and Guattari indicate a tension in Marx's formulations concerning the relative importance of the development of means of production on the one hand, and of the underlying social relations of production on the other. They argue that the social productive relations, or the 'social machine' must be viewed as the determining factor which integrates different machinic elements as parts of the machinic whole. Accordingly, Deleuze and Guattari criticise Marx's way of basing the evolution of technical means of production – tools and machines – on the activity of the human body (AO, 481–82; cf. Marx, 1991, 15–17, 333–47). However, I argue that they also formulate a principle of technical creativity in the form of the 'phylum'. As we will see in Section 6.6, however, the concept of machinic phylum is not based on the model of organic evolution but envisages an inorganic mode of

evolution. According to Deleuze and Guattari, the social machine selects the appropriate instruments, but this selection is ultimately a non-conscious dynamic process, which does not express a conscious aim but the nature of the social machine. Similarly, tools and weapons and other technical instruments are essentially assimilable to technical elements, as they are the equivalent of parts of machines.

Third, affectivity defines the nature of a technical element and of a technical machine. While this affectivity thus expresses the particular nature of the technical element, it is determined by the surrounding social machine or assemblage. Nevertheless, weapons, tools and technical elements in general do possess their own material history, which Deleuze and Guattari call the 'machinic phylum'. This phylum constitutes a creative process of variation, which is stabilised as *strata*. Indeed, drawing on Leroi-Gourhan, Lewis Mumford, and a host of philosophers of history, Deleuze and Guattari also define anthropomorphic strata in terms of technicity, or *alloplasticity* – modification of the environment. In a word, the human being is for them also essentially a technical animal. However, the strata also refer to the established, stabilised processes and habits in the context of technology, while Deleuze and Guattari discern a distinct, *transformative* potential within technical phenomena. This can be seen in various aspects of their theory: the creative principles of assembling are called 'machines'; the machinic phylum is foremost described as a 'technical lineage' of technical objects; metallurgy is presented as the nomad science *par excellence*, in direct communication with the phylum; the body without organs is assimilated to *metal*.[1]

[1] Here we must again note the problematic nature of the humanist or romantic tendency of interpreting Deleuze's technological and scientific concepts as metaphors for something else. According to this point of view, for instance the concept of *machinicity* has nothing to do with technical machines and technology, but it rather refers metaphorically to human activity and social and psychic processes. However, this reading presents two important problems: (1) it is fundamentally opposed to Deleuze's principle of taking metaphors and examples as seriously as possible (this can be seen clearly e.g. in his reading of Bergson, where Deleuze gives a pivotal role to what Bergson presents as mere illustrations of his thought, for instance the 'cone of memory and past'); (2) it utterly mystifies the notion of machinicity, making the choice of this particular term arbitrary. By contrast, I would argue with Deleuze that to engage with a concept means precisely taking it seriously and developing its existing connections as richly as possible.

We will first discuss the implications of Deleuze and Guattari's theory of machines for the common conceptions of technology. Second, we will analyse the social role of technics in terms of the Deleuzo-Guattarian concept of *assemblage*. This will involve a discussion of the affects of technical instruments within different types of social assemblages. Third, we will discuss technological creativity, on the basis of the concept of *the machinic phylum*, the continuum of technical inventions. We will also analyse the tension between this underlying technical creativity and the determination of technical elements by the assemblage in which they are included.

6.1 Desiring, social and technical machines

In *Anti-Oedipus* (1972) Deleuze and Guattari distinguish three kinds of machines: the desiring machine, the social machine and the technical machine. The technical machine corresponds more or less to the everyday notion of machine. However, Deleuze and Guattari consider it a part of a social machine, which it thus presupposes. The difference between social machines and desiring machines, on the other hand, is one of scale and of mereology (the relations of parts and wholes): desiring machines are the smallest relevant elements in a desiring production, while a social machine constitutes the dominant logic of organisation of a society.

> The true difference between technical social machines and desiring machines is not in the size, nor yet in the goals, but in the regime that decides on the size and the goals. [...] Technology supposes social machines and desiring machines, the ones in the others, and has no power by itself to decide which will be the machinising instance, desire or the oppression of desire. (AO, 480)

To put it briefly, technology is neither good or bad in itself, but technocracy easily becomes oppressive due to the unconscious drives invested in it. Naturally, the same can be said of other forms of activity. However, according to Deleuze and Guattari,

technology responds specifically to the demands of the social machine and thus it is not a simple, neutral instrument. This is why the 'neutral' development of technology according to them easily acquires a 'fascist colour'. What is essential for Deleuze and Guattari, is the distinction between two different organising principles, *molecular machinising desire* and the *anti-desiring, molarising social structure*. That is, one cannot understand a technical element except in this larger context and through its organising principle. However, technology is according to Deleuze and Guattari primarily at the service of the stabilising social structure, unless it is subjected to active, creative procedures.

In fact, later in *A Thousand Plateaus*, Deleuze and Guattari propose a subtler modification of this distinction: if in *Anti-Oedipus* the molecular creativity of desire is contrasted with molar conservatism, in *A Thousand Plateaus* the molecular bifurcates into supple tendencies and fleeing tendencies. To be more precise, Deleuze and Guattari identify the molecular with the supple, rhizomatic tendencies, but the fleeing 'lines of flight' take up certain former functions of desiring machines, for instance deterritorialisation. I argue that while in *Anti-Oedipus* desire is primarily a creative force, in *A Thousand Plateaus*, it becomes an ambiguous process which oscillates between the creative, fleeing tendencies and conservative tendencies. Furthermore, in the latter work the ambiguity of all these three tendencies is emphasised: the creative lines of flight can also turn into destructive processes, while the oppressive, conservative tendencies also offer a certain comfort in their stability. Finally, the rhizomatic, supple tendencies may lead to creative action, but they may also support restrictive habits and practices.

In their analysis of the social machine, Deleuze and Guattari partly draw on Mumford's concept of the 'Megamachine', which essentially refers to a rigid, totalitarian social structure. In *Anti-Oedipus*, Deleuze and Guattari dub such a power structure 'the despotic social machine'. Mumford presents a powerful critique of the mechanistic tendencies of human culture from the first despotic civilisations in

the Fertile Crescent to the space programmes and nuclear industry during the Cold War. Deleuze and Guattari find inspiration particularly in Mumford's idea of the Megamachine as a social machine consisting essentially of humans, as for instance in the construction of the pyramids in ancient Egypt.

> Now to call these collective entities machines is no idle play on words. If a machine be defined, more or less in accord with the classic definition of Franz Reuleaux, as a combination of resistant parts, each specialized in function, operating under human control, to utilize energy and to perform work, then the great labor machine was in every aspect a genuine machine: all the more because its components, though made of human bone, nerve, and muscle, were reduced to their bare mechanical elements and rigidly standardized for the performance of their limited tasks. The taskmaster's lash ensured conformity. Such machines had already been assembled if not invented by kings in the early part of the Pyramid Age, from the end of the Fourth Millennium on. (Mumford, 1967, 191)

Furthermore, Mumford criticises the definition of the human being as a tool-making animal. For him, the first human tools do not do justice to the cognitive and bodily abilities of their users. Namely, as Mumford convincingly argues, the neurological capacity of the first humans was already more or less the same as ours – the creation of language was a feat far more complex than any of the tools or machines that humans would construct until the modern era. Indeed, according to Mumford, the first technical skill humans learnt was the control of their own body, including the faculties involved in speech.

There are several fruitful agreements between Mumford and Deleuze, but the most problematic question concerns the role of the *organic*. Namely, Mumford's notion of the organic agrees in many aspects with Deleuze's machinicity, but Mumford's suspicion towards mechanisation leads him on the one hand to accord only an instrumental role to machines, and on the other hand, to associate organic nature

with a certain harmony pertaining to wholes. However, Mumford also develops a concept of *life* very akin to Deleuze's and Bergson's, as an open process of creation and variation, also involving the development of technics. Still, Mumford often has recourse to a simple opposition between nature and artefact, where processes conducive to life *conform* with existing organic processes, while artificial man-made devices and processes are more often than not a hindrance to life. Accordingly, if for Mumford *technics* exists in nature and may well function harmoniously, the term 'machine' primarily implies an exaggerated and harmful human control and power over the natural world (including human life).

By contrast, as we have seen, Deleuze and Guattari extend the realm of machinicity everywhere, making the distinction between nature and artefact only a relative one. However, this does not mean that life is solely machinic; on the contrary, according to Deleuze and Guattari, machinicity and organicity must be immanent to one another. Central here is the point of view of *modes of operation* or functioning, manners of being. Namely, the machinic and the organic pick out different processes in the same phenomenon: the machinic consists in assembling in variation, while the organic constitutes the internal structure and regular processes of a body. Indeed, the distinction is coextensive with those of molecular/molar, micro/macro, supple/rigid, even if each distinction refers to a slightly different aspect of a phenomenon. Thus, according to Deleuze and Guattari, the organic features of bodies are perfectly real, but these are precisely the features that *limit* the body. Machinicity, on the other hand, refers to the connective and affective dimension of the body, which is in immediate connection and interaction with the outside of the body. The important question is thus not whether the organic conception of the body is true or false but what its mode of operation and the corresponding image of thought are and how this mode of operation affects the connectivity of the body.[2]

[2] Again, in a Spinozan-Bergsonian fashion, 'image' here invokes the immanent parallelism between material processes and their cognitive appearance. I argue that Deleuze and Guattari rarely refer to this distinction precisely because thought and action always imply one another. For instance, according to them, a book always does what it says, 'there is no difference between what

As we have seen, according to Deleuze and Guattari, a machine requires a counterpoint of unproductivity – an organless body. There is a basic tension between the unproductive organless body and the productive machines – organs – which are inscribed on the body. The organless body serves as a kind of interface or surface of inscription for desiring production. Thus, it is a primary condition for desiring production.

> The genesis of the machine happens on the spot, in the opposition between the process of production of desiring-machines and the unproductive posture of the body without organs (AO, 15).

However, the organless body also resists the desiring production and reacts to it with repulsion. While this repulsive reaction of the organless body to the desiring machines is real, according to Deleuze and Guattari, the conflict is only 'apparent'. Thus, in normal conditions, the collaboration between desiring machines and the organless body is productive, but the collaboration is based on unproductive flows on the body without organs, undermining all structures and organisation.

We saw earlier in Section 2.1 that the body without organs is a kind of limiting surface of desiring production, which has as its avatars the 'full bodies' of societies, or *sociuses*. In the social context, the full body (socius) appears as the 'quasi-cause' of production (AO, 16). Thus, paradoxically, the element of antiproduction presents itself as the productive source. Deleuze and Guattari call this social element of antiproduction *socius* or 'the full body' and assimilate it with three figures: earth, the despot and capital. These figures each correspond to different historical types of society or *social machines* (primitive, imperial-despotic, capitalist). Thus, for instance in the case of capitalism, capital appears as the source of the production of surplus-value, while in fact, according to Deleuze and Guattari, it is precisely the unproductive limit of capitalist production. Capital's role as the surface of

a book talks about and how it is made' – this is a basic point of machinicity (MP, 10). Thus, from the point of view of operations, the distinction between mind and body is a superficial one, concerning only the point of view on the operation or process.

inscription for production and its surplus value creates this virtual image of capital as the origin of value and of its production. According to Deleuze and Guattari, this is not so much a false consciousness of a real process as a true consciousness of a false or apparent process (AO, 16).

Deleuze and Guattari describe the functioning of desiring and social machines as necessarily unhinged (*détraqué*) in themselves (AO, 38–39). This means that these machines include within themselves the unproductive condition of their productivity, their combustible as it were. In this the Deleuzo-Guattarian machines are different from technical machines, whose combustible is external to them and whose principal limitation is wear and tear. Also, the technical machine produces a separate product, while in the desiring machine and the social machine production and product are closely intertwined. The larger context of the social machine precisely introduces the role of an unproductive element – the body without organs expressed as the *socius*. But in this social context, the technical machine becomes an element in the social machine which essentially has *people* as its parts, even with the multiplication of machines in society.

6.2 Machinic assemblages and technology

As I already pointed out in Section 3.7, in *A Thousand Plateaus*, the notion of desiring machine is supplanted by that of *machinic assemblage* (*agencement machinique*) (DRF, 163). In *A Thousand Plateaus*, Deleuze and Guattari try to underline ever more strongly the connected and assembled character of desire, as opposed to being an internal trait or urge of the conscious mind. Thus, desire is still bodily and connective, but Deleuze and Guattari single out various desiring assemblages as configurations of material elements and processes, which however are open to a process of variation. Thus, as we saw earlier, the transformative nature of machinicity

and desire is emphasised over their constitutive, synthetic role, and the distinction between these roles is made clearer than in *Anti-Oedipus*.

Deleuze and Guattari analyse technology as a central context for the functioning of assemblages. For instance, tools and weapons manifest affective differences, but these are only brought out in a particular assemblage – in the working machine in the case of tools, and in the war machine in the case of weapons (MP, 495). Deleuze and Guattari seem to suggest that the affects of particular technologies are absolute and concrete – the affect is not merely a question of point of view – but these affects (e.g. speed and slowness) are determined by the assemblage of which the technology is an element. Hence the different affects of for instance knives, to which we referred earlier. However, an assemblage is different from a mere context in that a context can constitute an autonomous and indifferent setting with regard to its elements, while the assemblage is a mode of being which is constituted and exhausted by its elements and their affects. Thus, although the same elements can be part of various successive assemblages, one cannot change the assemblage without changing its affects and the mode of being of its elements. I argue that an assemblage is primarily a particular mode of being, which characterises certain material elements and is expressed as the affects of these elements.

6.3 Processuality, divergence and consistency in assemblages

The concept of assemblage provides a way of conceiving of the different levels of society as forming a disparate whole. This means that the whole of society or the whole of an age can be seen as an assemblage with certain characteristic features, expressed as the 'full social body' or the *socius*. However, these features pertain to concrete, actual processes – they are not purportedly transcendental or general structures of society. Furthermore, as a particular society or age is not defined by an

all-encompassing (transcendent) structure or form, it can only be composed locally of a multiplicity of assemblages. That is, a society is composed of various groups, which may form any number of smaller assemblages.

On the other hand, for Deleuze and Guattari, there are no societal atoms which would constitute the sufficient reason of a society. The fundamental level of society is the one of composition or assembling. Still, the Deleuzo-Guattarian approach to society is a down-top one, as social reality is fundamentally constituted by concrete material actions, even if these are always accompanied by incorporeal (semiotic) transformations. What makes this approach complicated is the fundamentality of the composed nature of reality. Namely, assemblages are fundamental as a kind of structural-operational reality, even if as operations or processes they are not limited to a particular degree of reality but happen at different levels and may cross-cut levels. I argue that a processual perspective is necessary for the intelligibility of the Deleuzo-Guattarian 'transversal' approach. That is, as processes are more fundamental than beings and individuals, it is not surprising that they can traverse different levels of reality and coexist in them.

As we saw in Section 1.5, Gilbert Simondon calls this variational structure *transduction*. It refers precisely to a growing dynamic structure that expands to larger dimensions, for instance a crystal (Simondon, 2005, 32–33). In an elegant manner, Simondon is thus able to sidestep the traditional questions and aporias concerning whole and part, emergence, reduction etc. For instance, it makes no sense to ask whether the crystal can be reduced to its parts or whether the whole crystal possesses certain properties that its parts do not. Namely, the crystal is autopoietically generated by a process which starts from a germ accidentally introduced in a metastable liquid and expands homomorphically to ever greater dimensions in a fractal manner, that is, reproducing the same structure on different scales. Similarly, as assemblages are governed by micro-operations and processes – by abstract

machines – these allow them to connect to other assemblages and extend to higher levels of society.

In his *Chaosmosis*, Guattari seeks to develop the theme of autopoiesis developed by the biologists Varela and Maturana. Varela distinguishes between allopoietic and autopoietic systems: allopoietic systems create something external to themselves, whereas autopoietic systems create and recreate themselves. Varela himself views technical machines and social institutions as allopoietic, and biological individuals as autopoietic. However, Guattari wants to re-evaluate these concepts in terms of machinic assemblages:

> Autopoiesis deserves to be rethought in terms of evolutionary, collective entities, which maintain diverse types of relations of alterity, rather than being implacably closed in on themselves. In such a case, institutions and technical machines appear to be allopoietic, but when one considers them in the context of the machinic assemblages they constitute with human beings, they become ipso facto autopoietic. Thus we will view autopoiesis from the perspective of the ontogenesis and phlyogenesis proper to a mechanosphere superposed on the biosphere. (Guattari, 1992, 62/40)

As one can see here, the point of the concept of machinic assemblage is precisely to take into account all the relevant features of a real system, not simply the habitual ones. Thus, as part of a machinic assemblage, a technical machine is not simply a means for achieving certain goals external to the machine itself, but it can be seen as part of a mode of life or being, namely of the particular assemblage in which it is embedded.

When a certain social process becomes influential, this would seem to entail a degree of uniformity within the assemblage. However, Deleuze and Guattari claim that here one must still embrace the down-top model and understand such convergence merely in terms of *consistency*. Consistency is Deleuze's general term for local communication, which is established in local connections and operations. Still, the

existence of consistency does not make reality any less disparate and divergent, as all convergence is the result of active operations.

History abounds with examples of the fundamental divergence at the base of societies. Consider the Pax Romana for instance. At face value it would seem to be a counter-example to the fundamentality of divergence on which Deleuze insists: for around two centuries, the Roman Empire experienced a singularly long era of peace and prosperity, never to be repeated again. Thus, at least in principle, human beings would seem to be capable of peaceful coexistence. Was the period of peace a manifestation of the human *telos*, which had been and has ever since been simply obscured by contingent empirical circumstances? Yet this relatively long period of peace was only made possible by the development of the Roman Republic that took around 500 years and involved a continued series of violent outward conquests and also of inward civil wars. Secondly, the peace was established by undermining many of the most cherished republican principles, ignoring the advice of the Senate and establishing an autocratic leader. Thirdly, and most importantly, the period of peace was constantly threatened by attacks from Germanic tribes, which ultimately ushered in the end of the Pax Romana and the beginning of a less stable era. Furthermore, the prosperous period was made possible by a multitude of slaves freighted in from Roman provinces, who naturally did not enjoy all the benefits of the citizens. (cf. MP, 271–72)

All in all, one could argue that the seemingly uniform phase of the Roman empire was actively maintained by military forces conjuring away divergent forces and tendencies. Furthermore, it would seem that this period did not do away with disintegrating processes even temporarily, but simply managed to slow them down. Thus, the reality of a society is not defined solely in terms of its uniformity or order, but essentially by its tensions and transformative tendencies. However, Deleuze and Guattari emphasise that these tensions are not diametrically opposed, as for instance class interests in the Marxist outlook, but instead, they express divergent lines of

development, each having a positive existence of its own. 'A social field is defined less by its conflicts and contradictions than by the lines of flight which traverse it' (MP, 114).

6.4 Determining technical assemblages and the creative phylum

As we noted, in *A Thousand Plateaus*, Deleuze and Guattari specify the notion of desiring machine and refer to an assemblage of desiring machines rather as a *machinic assemblage of bodies*. Thus, a body in a sense becomes the basic machinic and material element, but its nature and mode of existence – its *affects* – are always defined by an assemblage. Deleuze and Guattari refer to the affective dimension of actions and passions as *machinic*. The assemblage is a dynamic system of bodies acting and reacting to each other in specific ways characteristic of the system (MP, 112).

Even within the context of technology, tools cannot be considered simply for themselves, as 'tools exist only in relation to the interminglings [*mélanges*] they make possible or that make them possible' (MP, 114). Namely, a tool is the result of the assembling, selective process of a social machine. Similarly, Braudel emphasises the social context of technological development and the resulting non-linearity of this development (Braudel, 1981, 334–35). However, the particular selections by the assemblage imply a technical lineage, a material continuum in variation manifested as the history of technology.

> Tools are inseparable from the symbioses or amalgamations that define a machinic assemblage Nature-Society. They presuppose a social machine that selects them and takes them in its 'phylum': a society is defined by its amalgamations, not by its tools. [...] There is a primacy of a machinic assemblage of bodies over tools and goods [...]. (MP, 114)

We introduced the notion of phylum in Section 2.5 and now we can flesh out the concept's implications for technology. Deleuze and Guattari define the phylum as: 'the materiality, natural or artificial and the two at once, matter in movement, in flux, in variation, as bearing singularities and traits of expression' (MP, 509). In brief, the phylum is dynamic materiality, within which all material and technical activities take place. It is the material aspect of the abstract machine, while the diagram is its functional or expressive aspect. The phylum constitutes the dynamic, continuous materiality of the assemblage that is the social machine. Furthermore, the machinic assemblage of bodies defines the nature of a tool, but in interaction with the tool, in relations of actions and passions. Assemblages are the technical equivalent of the biological 'natural selection', working on and continuing the material evolutive process of the phylum.

As we saw in Section 2.7, the anthropomorphic strata are defined by a technological content and symbolic or semiotic expression. However, the technological content does not merely refer to technical machines, tools and the hand, but also to the technical social machine that precedes them and 'constitutes states of force or power formations', which act as determining and selecting agents for technical elements and their usage.

> But the principle of all technology is to show that a technical element remains abstract, completely undetermined as long as it is not connected to an assemblage which it presupposes. What is primary in relation to the technical element is the machine: not the technical machine which itself is a group of elements, but the social or collective machine which will determine what is a technical element at a given moment, what its use, extension, comprehension etc. are. (MP, 495)[3]

[3] The terms 'extension' and 'comprehension' refer here to logical concepts, extension in the modern sense as the instantiations of a concept and comprehension as its sense or intension, what is understood by the concept. However, in this context the extension and comprehension are not confined to logical usage and formal semantics, but they are used as categories of the real.

However, Deleuze and Guattari further add that 'it is by the intermediary of assemblages that the phylum selects, qualifies and even invents technical elements' (MP, 495). Thus, according to Deleuze and Guattari, in their mode of life, human beings are primarily determined by the habits and affects of a particular assemblage but in their technical creations they are as if swayed by the machinic phylum as affective, creative materiality, which transforms the assemblage.

6.5 Machines and the anthropomorphic stratum

According to Deleuze and Guattari, the machinic point of view pervades all strata, but paradoxically, machines are nevertheless distinctly anthropomorphic:

> With the third stratum emerge Machines that fully belong to this stratum, but which at the same time rise and point their pincers in all directions towards the other strata. *Is it not as an intermediary state between the two states of the Abstract Machine*? – the one in which it remained enveloped in the corresponding stratum (ecumenon), and the one where it developed for itself on the destratified plane of consistency (planomenon). (MP, 82)

Thus, machines are essentially an anthropomorphic phenomenon, but they are directed towards all the other strata, creating the human or humanist illusion of the whole world as man's territory. For Deleuze and Guattari, this illusion is essentially due to the *overcoding* nature of language, which is the expression of the anthropomorphic stratum, as we have noted earlier: due to the independence of the linguistic form of expression from all substances, language can translate the forms of all other strata into its own form of expression (words), thus bringing about a kind of transubstantiation (MP, 81). Indeed, Deleuze and Guattari indicate *translation* (*traduction*) as a distinctly human, semiotic operation (MP, 82).

However, this illusory universalism is based on concrete forms of content and expression: the hand and the tool within the social machine and its power formations; face and language within a semiotic machine and sign systems (MP, 82). Secondly, although machinicity is a distinctly human phenomenon, it cannot be reduced to this. Namely, machines are situated between the anthropomorphic stratum ('ecumenon') and the plane of consistency ('planomenon'). As we have seen, the fleeing and transforming tendency towards the plane of consistency articulates first of all the essential role of deterritorialisation for machines and technology. Second, it is an expression of the immanence of all strata: even if technology and language are *de jure* anthropomorphic, they are *de facto* intermingled with all other strata, to the point where they become indistinguishable.

6.6 Machinic phylum as matter in variation

Deleuze and Guattari account for technological continuity in terms of *machinic phyla*. Normally, 'phylum' is a taxonomic term meaning a bifurcation or lineage of a taxonomic kingdom, for instance Chordates within the kingdom Animals.[4] I would argue that this concept is primarily inspired by Bergson's account of evolution and phylogenesis in *Creative Evolution*; the machinic phylum refers to the continuum of a machinic and technological phylogenesis. Thus, the phylum portrays technology as a continuation of biological evolution and as a means of adaptation, as a line of development. However, in so doing, the machinic phylum also undermines the exclusive 'naturalness' of biological evolution, from two points of view: first, as Samuel Butler convincingly claims in *Erewhon*, life is full of examples of biological machinicity, where one species may even not be able to reproduce without the help of an external aid (e.g. most flowering plants). Second, not only is nature itself in this sense machinic, but with the expansion of human territory and technology, the rest of nature is also gradually integrated into them in one way or another. Nature

[4] The Greek *φύλον* means 'a tribe' or 'race'.

is used as a resource for human life, but it is also developed by selective breeding and genetic engineering.

The concept of machinic phylum portrays a continuum of interrelated technical inventions, which form a kind of continuum or converging set of singularities. Deleuze and Guattari define the machinic phylum as 'the materiality, natural or artificial and the two at once, matter in movement, in flux, in variation, as bearing singularities and traits of expression' (MP, 509). Thus, for instance the autonomous cases of inventing the smelting of iron on the one hand, and forging it on the other, manifest the same phylum, just as with all other products of forging (hammers, daggers, swords etc.).

In a Bergsonian formulation, a phylum is 'matter in movement' (MP, 506–10). Thus, the concept continues Deleuze and Guattari's critique of hylomorphism with a dynamic conception of matter from the point of view of its intrinsic potentials and variation. Indeed, in reference to Aristotle, Deleuze and Guattari define form and substance reciprocally as accounting for constituted material things (substance is formed matter and form is always the form of a material substance). Accordingly, a phylum is matter affected only by variation and movement, not by a substantial form. However, the variation is essential to the matter of the machinic phylum, as variation constitutes the phylum from within. The variation of phyla has a double existence as singularities and traits of expression:

> We can speak of a machinic phylum, or technological lineage, whenever we encounter a group of singularities, prolongable by operations, which converge and make the operations converge on one or several assignable traits of expression. If the singularities diverge, one must distinguish two different phyla. (MP, 505–06/406, transl. modified)

As we have seen, from a general point of view, singularities manifest the dynamic and variational structure of a corporeal being. In this case, singularities constitute those features of the material which are the most relevant for manipulating the

material, for instance the melting point of iron or the grain direction in wood. Specific operations make these singularities manifest, such as smelting in a blast-furnace.

On the other hand, the operations that make the singularities manifest produce certain expressive traits (hardness, weight, colour, piercing, figures appearing on the surface of the metal). Furthermore, Deleuze and Guattari assimilate expressive traits with *affects*: 'Instead of a form capable of imposing properties onto matter, we point to material traits of expression which constitute affects' (MP, 508). What is important here is that these expressive traits are produced by the operations which manifest and prolong the singularities, but they are also immediately perceptible, while the singularities are only perceived as virtual through the behaviour of the material. For instance, the boiling point as a singularity is virtually real in the sense that one can measure it only indirectly with a thermometer, regardless of its perceivable effects of boiling. Indeed, the *affect* of boiling is immediately sensible. Thus, I argue that operations are directed at the singularities, which constitute the technical knowledge, but it is the affects that manifest them, before or after the operation. Deleuze and Guattari also speak of 'affective qualities' in this context (MP, 505). However, I argue that an expressive trait is not simply a perceptible quality but a kind of *operative* quality, resulting essentially from interaction with other bodies.

6.7 Machines, tools and weapons

Deleuze and Guattari distinguish machines from *tools*: machines are assembled systems, while tools are for them essentially projections of human organs. A tool is equivalent to a technical element – a part of a machine or of a machinic assemblage. With Fuller, Deleuze and Guattari suggest that tools and weapons have a common origin and that they cannot be intrinsically distinguished (MP, 491; Fuller, 1998,

17). Namely, tools and weapons share a common lineage or *phylum* and their differences derive from the assemblages where they are involved and which direct a selective pressure on the phylum.

Deleuze and Guattari analyse the difference between weapons and tools in relation to affects and feelings or sentiments: 'Affects are projectiles just like weapons; feelings [*sentiments*] are introceptive like tools' (MP, 498/400). Both can be regarded as emotions, but in the sense that feelings are held inside – they are internalised and postponed affects – while affects are emotions only in the sense of immediate responses and reactions. Furthermore, I argue that here as with many such oppositions, the binary opposites must be viewed as the extremes of an intensive scale. That is, both weapons and tools are 'affective', but weapons express the higher degree of affectivity (more mobile, quicker, more projective), while tools manifest a lower degree of affectivity (less mobile etc.).

Deleuze and Guattari suggest five points of view by which weapons and tools can be distinguished (MP, 501).

1. direction (projection–introception)
2. vector (speed–gravity)
3. model (free action–work)
4. expression (jewels–signs)
5. passionate or desiring tonality (affect–feeling).

However, they underline that these points of view on technical elements are absolute only from the point of view of a particular machinic assemblage or 'collective machine' without which they become abstract and undetermined (MP, 495). Thus, it is possible that a particular weapon becomes a tool in a different assemblage, thereby also changing its affects and expressive traits. However, the assemblages are not arbitrary, as they have to be concretely created and assembled. Accordingly,

even if there are no invariable *intrinsic* physical characteristics which would allow us to distinguish weapons from tools as technical elements, they do have absolute, affective characteristics *internal* to a particular assemblage (MP, 492, 495, 501).

First, the weapon is essentially thrown or cast outwards, while the tool is part of a sphere of interiority. The tool faces resistance from the material, whereas the army tries to avoid or invent ripostes. (MP, 491–92)

Second, different sorts of movement are associated with the weapon and the tool: speed and locomotion, respectively. This point of view is closely connected with the different modes of occupying space: smooth and striated. Smooth space is characterised by local determinations and vortical movement, while striated space entails a global, orthogonal grid. For instance, gravitational lines establish a general, orthogonal grid, according to which all things can be mapped. Furthermore, Deleuze and Guattari cite Virilio's criticism of the traditional notion of war as a simple continuation of hunting. By contrast, according to Virilio, war involves the adoption of the point of view of the chased animal, which makes other people appear as enemies. Most importantly, speed as the vector of the weapon in the war machine creates its own absolute movement, not relative to an external grid, unlike the movements of the tool. By contrast, locomotion is the typical movement of tools, relative to a grid or coordinate system and consequently universally measurable.[5] (MP, 492–94)

Third, Deleuze and Guattari define work as a 'motor cause, which faces resistances, operates on the outside, is consumed by its effect and must be renewed at every instant'. Free action on the other hand 'only operates on the mobile body itself, is not consumed by its effect and continues from one instant to another.' (MP, 494–96)

[5] The difference between speed and locomotion would seem to correspond to the idea in General Relativity Theory that all movement is relative, but forces are real (and forces are always expressed as accelerating movement). In terms of the intensive–extensive distinction, movement is relative from an extensive point of view, but real or absolute from an intensive point of view – a force is absolutely greater or lesser than another force and thus not relative to a coordinate system.

Fourth, tools and weapons have different *modes of expression*: signs and jewels, respectively. 'Work requires the capture of the activity by the State, as well as a semiotisation of the activity by writing' (MP, 499). We should remember that the invention and the extensive adoption of writing roughly coincides with the establishment of the first civilisations and of the division of labour. Thus, work is arguably always linked to an organised society with its symbolic practices and institutions, while the activities of primitive communities can only anachronistically be labelled as work. By contrast, Deleuze and Guattari see jewels as a semiotic element of weapons. However, they claim that the jewels which decorated ancient weapons were not primarily symbolic but expressed the affects and dynamic aspects of the weapons in the manner of signals. According to Deleuze and Guattari, jewels and ornaments often embellished the most mobile parts of a weapon, for instance the arrowhead, even though it was used only once. (MP, 499–500)

Finally, as we already saw, weapons and tools differ according to their passionate or desiring tonality, the emotions relative to them. The affect of the weapon is a 'quick discharge of emotion, riposte, while feeling is an emotion that is always postponed, held up, resisting' (MP, 497–98). As I have suggested, the dimension of affectivity provides for Deleuze and Guattari the most relevant distinction between the war machine and the state apparatus: a high degree of affectivity corresponds to openness towards the outside and interaction with it, while a low degree corresponds to centripetal movements and an established mode of life.

6.8 The war machine and the state apparatus

Weapons and tools are part of the continuous technological lineage or *phylum*, but they are selected and differentiated by assemblages. The diversity of both kinds of implements also implies a great diversity of assemblages. However, Deleuze and Guattari point to two primary types of social assemblage in this respect: the war

machine and the state apparatus. The primacy of these assemblages is due to the fact that they epitomise the affects of the weapon and of the tool, or alternatively we could say that the weapon *is* the affect of the war machine and similarly the tool constitutes the feeling of the state apparatus.

> But the regime of the war machine is rather one of affects, which refer only to the moving in itself, to speeds and compositions of speed between elements. The affect is a quick discharge of emotion, riposte, while feeling is an emotion which is always held up, postponed, resisting. (MP, 497-498)

Thus, it is the kinds of movement involved in the weapon and the tool that determine their affects – or in the case of tools properly speaking the feeling, which is a kind of anti-affect or suppressed affect. These affects of the technical elements and machines are determined only in and by assemblages. The particularity of the war machine is that it embodies the affectivity of assemblages in its purest or most immediate form. However, the most important aspect here is the kind of free movement that affects manifest, expressed also as 'lines of flight', tendencies which lead towards systemic transformations. On the other hand, the state apparatus is the essence of sedentary existence and organisation, historically emerging as part of the same complex as labour and writing to which we referred above.

Despite the violent connotations of the concept of war machine, Deleuze and Guattari repeatedly stress that war is not the primary object of the war machine. Wars becomes its object only when the war machine encounters the state apparatus or when the former is appropriated by the latter (MP, 519–21).

6.9 Simondon and the life of technical objects

Gilbert Simondon had a profound effect on Deleuze's thought, in particular in relation to two central themes: individuation and technicity. Deleuze openly adopts

Simondon's dynamic perspective on individuation, which we discussed in Section 1.5. Furthermore, he also endorses Simondon's venture to analyse the intrinsic life of machines and technicity, beyond crude oppositions between the artificial and the natural. We saw that Simondon develops a dynamic theory of individuation, not in terms of matter and form, as in Aristotelian hylomorphism, but forces and structural singularities. Furthermore, Simondon develops his model of individuation through a critique of Aristotle's artisanal technological model, where he argues that the material's intrinsic potentials and forces must be acknowledged, as well as the interventions of the artisan and the social context of production. In a Bergsonian manner, Simondon sees technological individuation as a continuation of natural life and according to him, we should thus model technological individuation on vital processes, and not the other way round as in the hylomorphic scheme. (Simondon, 2005, 48–49)

Still, according to Simondon, technical objects are in their primitive, 'abstract' state separated from natural processes. Simondon expresses the difference between technical and biological individuation in terms of their 'allagmatic' character, which refers to the relation between the transformative process and its object. In the technical object this link is cut once the object is finished, while in biological individuation this relation is internalised and maintained (Simondon, 2005, 48–49, 352). This is also the basis of Simondon's definition of artificiality: artificiality does not result from human fabrication but from the need of human intervention in order to maintain the object in existence. In an original manner, Simondon thus defines artefacts by their mode of being and their *end*, not by their origin. He calls the progress of machines or technical objects 'concretisation', of which the ideal is the life of natural organisms and of natural systems. Thus, artificiality is for Simondon an initial state of imperfection, before the realisation of a relatively autonomous and functional technical object, which however communicates with its surroundings and can thus maintain itself. (Simondon, 2012, 56–58) Simondon also distinguishes

machines from mere automatons and sees the indeterminate openness to external information as an essential quality of machines (Simondon, 2012, 12–14).

The difference between Deleuze and Simondon's approach to technicity can be seen in the latter's great interest in recent technological development and technical machines, in contrast to the former's interest in the history and material aspects of technology, notably the history of metallurgy. Thus, Simondon focuses on the finished and intricate technical object as an expression of human technical ability and its degree of sophistication, while Deleuze together with Guattari stress the immediate, material side of technicity, visible in metallurgy in particular (MP, 511).

> But Simondon shows that the *hylomorphic* model puts aside many things, active and affective. On the one hand, to the formed or formable matter we must add an entire energetic materiality in movement, carrying *singularities or haecceities* that are already like implicit forms that are topological, rather than geometrical, and that combine with processes of deformation: for example, the variable undulations and torsions of the fibres guiding the operation of splitting wood. On the other hand, to the essential properties of the matter deriving from the formal essence we must add *variable intensive affects*, sometimes resulting from the operation, sometimes on the contrary making it possible: for example, wood that is more or less porous, more or less elastic and resistant. At any rate, it is a question of following the wood and following where it leads by connecting operations to a materiality, instead of imposing a form upon a matter: what one addresses is less a matter submitted to laws than a materiality possessing a *nomos*. One addresses less a form capable of imposing properties upon a matter than material traits of expression constituting affects. (MP, 508/408)

However, Deleuze and Guattari precisely bring forth the machinic aspects of life itself – its assembled character, connectivity, productivity, openness to variation.

They agree with Simondon that life should not be modelled on technical objects, but neither should machines be reduced to *organisms*. Thus, what does not become entirely clear in Simondon's work is that the hylomorphic scheme is in fact not a truly artisanal model but on the contrary, the consequence of organic organisation and representation. As we have seen above, the organic model corresponds to the end product and both are isolated from the production process. Simondon analyses the intrinsic dynamisms of individuation, but he considers less the role of exogenous elements in individuation – this would be the properly machinic dimension, opening the individuation to external influences. Incidentally, this machinic aspect becomes more important in Deleuze's thought through the collaboration with Guattari.

Chapter 7

Computers, capitalism and technical creativity

According to our tripartite scheme of the history of technology, the focus of technological development was first centred on mechanical structures (clockwork). The second stage was characterised by energetic machines powered first by steam, and later by oil and nuclear reactions. The latest, current stage in this scheme is the one of *information technology*, epitomised by computers. Deleuze and Guattari describe this last phase bleakly as a 'regime of enslavement':

> If motor machines constituted the second age of the technical machine, the machines of cybernetics and computer science [*l'informatique*] form a third age, which recomposes a regime of generalised enslavement [*asservissement*]: 'man-machine systems', reversible and recurrent, replace the ancient nonreversible and nonrecurrent relations of subjection between the two elements; the relation between man and the machine is established in terms of internal, mutual communication, and no longer in terms of usage or action. (MP, 572)

The computer would seem to be the privileged model and stratum of contemporary technology. Consequently, it has also become the ideal for human activity. Indeed, I argue that each stage of technology manifests the dominating ideal of human activities: technology appears as the pinnacle of human endeavours. Thus, it is natural that there is also a feedback loop back from the model to the ideal itself. That is, as digitalised information processing seems to be the latest large-scale technological breakthrough, this seems to lead to the imperative that all spheres of life must be updated to fit this technological regime.

The computer has established a norm for human activities: human actions should be programmable, automatable, digitalisable. In fact, I argue that this is the contemporary version of the Lacano-Kantian categorical imperative: 'Never act except in such a way that your action could be programmed' (Lacan, 1986, 94). In contemporary pedagogy, the digital normativity can also be seen in the explicitly formulated principle 'use a digital apparatus whenever possible'; the use of digital equipment is recommended as a general rule, without qualifications concerning the suitability of the medium. Regardless of the bene- or maleficence behind the principle, it would seem a clear example of what Harari calls the *dataism* of the contemporary age. 'Dataism says that the universe consists of data flows, and the value of any phenomenon or entity is determined by its contribution to data processing' (Harari, 2016, 367).

Furthermore, the computer has also become the model for human beings themselves: the human being is assimilated to the human brain and the brain is assimilated to a complex organic computer. With the brain, the informational ideal concerning humans themselves and the digital ideal of human action thus come together: the human being is reduced to the information processing capacity of the brain, for which we *must* create a digital model, as if the brain could and should be reduced to a computer. Indeed, this digitalisation of the brain is the goal of the prestigious *Human Brain Project* funded by the EU.

Automation is an essential characteristic of computation and cybernetics. It also permits us to draw a connection to the previous, modern technological model: motor machines. However, Deleuze and Guattari distinguish cybernetic automation from the motor one by two properties: reversibility and recurrence of the relation between man and machine in the flow of information.

Deleuze and Guattari are interested in information technology as a medium of power. They analyse the use of power in modern capitalism in terms of axiomatics. I argue that for Deleuze and Guattari, the essential feature of axiomatics and capitalism is their *homogeneity*. Homogeneity creates a new kind of general structure, based on the *unit*, rather than on the overcoding of existing codes, as in the despotic system. Namely, the axiomatics of capitalist society deterritorialises the old regimes by decoding their codes. This seems to be what Deleuze and Guattari identify as the novelty and progress brought about by capitalism. However, axiomatics simply replaces the rigidity of a territorial or stratified code with the rigidity of a *unit*. This is indeed the basis of homogeneity, enabling a general control of the system as well as exchangeability of goods, and in particular the appropriation of new sources of surplus value within the system. In what follows, we will look at the nature of axiomatics more closely.

7.1 Axiomatics as organisation

According to Deleuze and Guattari, axiomatics is first of all a form of organisation, of establishing an order. Axioms delimit a field of possibility, establishing the sphere of possible truths. In the mathematical context axioms are often characterised as unquestionable facts, from which all necessary truths can de deduced. By contrast, Deleuze and Guattari define axiomatics in terms of homogeneous formality: 'axiomatics considers directly purely functional elements and relations whose nature is not specified and which are immediately realised simultaneously in very differ-

ent domains' (MP, 567). Accordingly, axiomatics is primarily a way of organising information and knowledge, but according to Deleuze and Guattari, it is also the specifically modern way of controlling actions and processes – 'conjugating flows' – in the social sphere (MP, 577).

I argue that the axiomatic mode of operation is always based on *a priori* homogeneity. The axiomatic homogenisation concerns the *conjugation* of processes, but not necessarily the processes themselves, whose heterogeneity Deleuze and Guattari often emphasise (MP, 543–44, 569). In the simplest form of capitalist homogenisation, *money* enables the conjugation of diverse flows of objects, energy and activities by making them commensurable within an economic community. I argue that the power and danger of information technology lie in its homogeneous informational media and in the consequent immediate applicability of capitalist control via the circulation of information (cf. MP, 572–73).

Despite the exact nature of axiomatics, according to Deleuze and Guattari, no axiomatic system is universal nor fixed. First of all, axioms are independent of one another and they can be added or subtracted at will. Thus, there is a certain unforeseeable experimentation to the establishment of an axiomatic, even if it is applied in an apodeictic fashion once it is established. Secondly, all axiomatic systems encounter *undecidable* propositions, which can neither be proved nor disproved. Thirdly, one can always find sets of a greater power to which the axioms do not apply. For instance, the mathematical perfect continuum cannot be axiomatised in a satisfying manner, as axiomatic systems rely on denumerable models, and the idea of a continuum implies the existence of a nondenumerable, infinite series, which thus has to be postulated by means external to the axiomatic itself. (MP, 576; Blanché, 1955, 80)

According to Deleuze and Guattari, axiomatics is the form of organisation linked to capitalism. Axiomatics decodes flows of desire. Also, if states are essentially territorial, capitalism is not bound by territories or codes. However, it establishes

a new mode of organisation or *conjugation*, according to its axioms. Despite its inherent deterritorialisation, capitalism operates concretely and realises its axioms via territorial states. Axiomatics as a system of homogenisation is what makes this possible.

Deleuze and Guattari introduce the concept of diagram as a semiotic alternative to axiomatic operations. Diagrams are pre-sensible, dynamic structures involving connections between heterogeneous elements, while axiomatics prescribe universal principles or axioms concerning a homogenous and discrete field of experience. Consequently, diagrams roughly correspond to creativity within mathematics and science more generally – Deleuze and Guattari suggest that axiomatisation is not primarily a positive scientific method but a way of maintaining order (MP, 179).

7.2 Codes

We will now look at Deleuze's theory of codes, as it is an important concept in relation to both axiomatics and the digitality of information technology. Furthermore, it is important to notice that Deleuze develops two different theories of codes. In the context of *Anti-Oedipus* and *A Thousand Plateaus*, codes refer to locally determined habits, which are characteristic of primitive societies (MP, 259; AO, 169). In *A Thousand Plateaus*, the concept of code also refers to the formal element of stratification, for instance in the context of genetics and linguistics. However, in the Francis Bacon book and the *Cinema* books, Deleuze formulates a concept of digital code.

In *A Thousand Plateaus*, axiomatics directly concerns generic elements and relations in a variety of domains simultaneously. A code, on the other hand, is always relative to a particular domain and articulates the specific relations between its elements (MP, 567).

> [...] Axiomatics considers directly purely functional elements and relations, whose nature is not specified, and which are immediately realised at the same time in very diverse domains, whereas codes are relative to these domains, pronounce specific relations between qualified elements, which only by transcendence and indirectly can be traced back to a higher formal unity (MP, 567).

Codes are more concrete and local than axioms and their possible higher unity is necessarily transcendent and external to the workings of the code itself. By contrast, axioms are according to Deleuze and Guattari 'functional', by which they mean that axiomatics treats phenomena only as unspecified variables, which are determinable only in their mutual relations. In the economic context, a classic example is the *production function* which describes the quantity of output as a function of capital and labour. However, what makes this functional representation particularly significant in relation to capitalism is that according to Deleuze and Guattari, it epitomises the transformation of labour around the time of the industrial revolution: labour became a pure, unqualified quantity. That is, prior to the industrial revolution, workers were strongly associated with particular tasks. With the proliferation of industrial production, factories were filled with literally unqualified workers, who started being represented as 'workforce', a quantitative fluctuation of labour. According to Deleuze and Guattari, capitalism arises from the encounter of the two decoded flows of capital and labour (AO, 41).

In *A Thousand Plateaus*, the essential social function of codes still appears as the organisation of the behaviour and actions of primitive societies. However, Deleuze and Guattari define a code more generally in terms of stratification as a 'periodic repetition' (MP, 384). As such it serves as the basis for a *milieu*. To put it briefly, the code is the basis of the formal aspects of a stratum, in the milieus, which are 'blocks of space-time' that constitute the elements of the stratum (MP, 65–68, 384). As we saw in Section 2.7, codes are part of the double articulation of strata. Namely,

double articulation operates on substances and forms relative to the stratum. 'Forms imply a code, modes of encoding and decoding. Substances as formed matters refer to territorialities, degrees of territorialisation and deterritorialisation' (MP, 55). Thus, each of the two articulations operates a codification and a territorialisation, expressed as form and substance, for both the content and expression of the stratum.

How does axiomatics differ from a code? In *Anti-Oedipus* and *A Thousand Plateaus* (i.e. *Capitalism and Schizophrenia*), codes refer to stratified forms expressed as recurrent patterns. I argue that axiomatics is based on a universal code. Thus, axiomatics needs to decode partial and local codes in order to make them commensurable with itself, but it can work with more generalised codes. In his book on Francis Bacon, published shortly after *A Thousand Plateaus*, Deleuze defines three forms of codes (FB, 75):

(1) Code as an intrinsic combination of abstract elements. In this sense, a code is primarily an intrinsic ordering of things, which need not refer to anything else. This definition applies to codes of conduct: they can simply be established and in operation without reference to an explicit and official set of laws for instance. This would seem to be the linear sense of 'code' in *A Thousand Plateaus*.

(2) Code as a combination that conveys a message or story, in an isomorphic relation, with a set of referents. In this sense, the code is a *code language* that can be *translated* into a linguistically understandable form due to the isomorphism of the code with a linguistic message. In *A Thousand Plateaus*, this translatability of language is called 'superlinearity'.

(3) Code as an ordering of extrinsic elements so as to be reproduced in an autonomous manner by the intrinsic elements of a code, for instance a picture generated by a computer. Here the code has reference, but not necessarily a linguistic meaning. This would seem to be the relation of the computer code language with its output. Here the relation between input and output becomes radically deterritorialised and arbitrary. However, I argue that the code is here always linked to a series of tech-

nical operations, even if these can be modified to a large extent, as in open source software.

In *Capitalism and Schizophrenia*, social codes are local and concrete; they also establish a binding order, but only in relation to particular places and moments, within a tightly knit community. Overcoding on the other hand transposes this order to the level of a larger society, implying a despotic organisation. Finally, axiomatics is universal and non-territorial, or rather deterritorialising, as it requires the breaking of the coded ties and tethers.

Later, in the *Cinema* books and *The Logic of Sensation*, Deleuze talks of codes in a slightly different sense, as what he calls the 'digital code' of abstract art. However, by 'digital', Deleuze does not here refer to numerical coding but to a system of optical expression and perception, where the sensorimotor system of hand–eye coordination is narrowed down to *finger*–eye coordination:

> [Abstract painting] replaced the diagram with a code. This code is 'digital', not in the sense of the manual, but in the sense of a finger that counts. 'Digits' are the units that group together visually the terms in opposition. [...] It is the code that is responsible for answering the question of painting today: What can save man from 'the abyss', from external tumult and manual chaos? Open up a spiritual state to the man of the future, a man without hands. Restore to man a pure and internal optical space, which will perhaps be made exclusively of the horizontal and the vertical. [...] The hand is reduced to the finger which presses an internal, optical keyboard. (FB, 67–68/104)

The numerical digital code organises information in terms of a binary opposition. Similarly, abstract painting seeks to reduce its elements to basic oppositions: vertical–horizontal, white–black, round–rectangular, thus creating a kind of code of expression. According to Deleuze, in the digital conception of art, the hand is subordinated to the eye. Thus, vision is internalised and the hand is reduced to a single finger,

whose function it is to choose the units corresponding to pure visual forms. 'The more the hand is subordinated in this way, the more sight develops an 'ideal' optical space, and tends to grasp its forms through an optical code' (FB, 99/155). Thus, what is essential here is the subordinate relation between the eye and the hand, not visuality or opticality as such.

While the digital involves a subordination of the hand to the eye, Deleuze calls the reverse subordination *manual*. In this case, the painting is still visual, but it offers to vision only 'a space without form and a movement without rest', which defy the optical order (FB, 99/155). By 'tactility', Deleuze also refers to manual elements within the optical space, such as depth, outline, relief, which however are only virtual.

Finally, in the *haptic* mode, according to Deleuze, sight discovers within itself its own function of touching, distinct from its optical function. Haptic seeing is not subordinated to the manual or tactile either but overcomes the distance between the optical and the tactile by touching as if directly with the eye (FB, 99, 103). As we can see, the haptic function of vision is very close to the *following* of material variations discussed above: it discovers the immediacy of sensation by surpassing the habitual sensorimotor schemata. Deleuze calls the object of such haptic vision an 'analogue diagram', which I will discuss in the next section.

Does Deleuze change the definition of code in his later work to fit the nature of numerical digital code? Or is digital code special precisely because it tends to become universal? I would suggest that numerical digital code is concrete and local, but it is homogeneous, it conforms to axiomatics and tends to be assimilated to it. Or as Deleuze and Guattari put it in *A Thousand Plateaus*, digital code conforms with axiomatics at the abstract level, even if its realisations are local and partial. Next we will look at the concept of the analogue, which Deleuze proposes as an alternative to the digital.

7.3 The digital and the analogue

We have seen that in the book on Francis Bacon, Deleuze defines digitality as a form of coding based on binary opposition. He retains the etymological, 'fingery' origin of the notion, and in the context of art, by digitalism he means a mode of expression where the hand is virtually reduced to a single finger, subordinated to the eye. This defines the basic programme of abstract painting for Deleuze.

Analogue expression on the other hand means following a *diagram*: immediate, continuous, sensible variation, produced by a multiplicity of heterogeneous modules. Deleuze criticises the notion that the digital would be based on an arbitrary convention and the analogical on resemblance (FB, 74). According to this train of thought, for instance the functioning of the analogical watch would *resemble* the flow of time more naturally than that of the artificial, digital watch. Although this distinction is possible at face value, according to Deleuze it fails to pin down the essential nature of the digital and the analogue: the *code* and the *diagram*, respectively. The case of the watch is instructive in this respect: the digital watch is programmed so that the electric states of transistors (code) regulate lights on the screen showing the desired numbers, while the analogical watch conveys the movement of the quartz crystal to the hands of the watch, thus amplifying the movement. So, if the code translates or converts information, the diagram simply conveys movement. Accordingly, nothing in the Deleuzean analogue is analogous *to* anything, but it only refers to the movement of a diagram.

How important is the digital form to computers? It would seem that the discreteness of the digital is more essential than the quantitative or numeric form as such. Indeed, the binary digits or bits of computers are not 1s and 0s but distinct, discrete electric states (on/off) e.g. in a transistor. Admittedly, the contemporary importance of computers is undoubtedly due to the fact that its physical functioning can be assimilated to axiomatics, that is, a computer is able to embody digital com-

mands minutely in an electronic form. Similarly, in an ideal well-oiled hierarchical organisation, the actions can be assimilated to the commands.

In its present form based on binary code, the computer is an apt tool for axiomatic systems. I would argue it is the homogeneity and discreteness that make digitality and computers prone to axiomatics. Hence Jacques Lacan's reformulation of Kant's categorical imperative, which we cited above: 'Never act except in such a way that your action could be programmed' (Lacan, 1986, 94). This is the sense in which computers serve axiomatics: it offers a physical prolonging or continuation of expressions that conform to axiomatics. Not only is this a necessary imperative of computing, but it has become pervasive in contemporary social engineering, where programmability is conceived as a necessary condition for the functioning of all forms of meaningful activity. In fact, I would suggest there is a transcendental illusion related to axiomatics and computers similar to the one I proposed in relation to the primacy of computers and the brain in the contemporary conception of humanity. The fallacy could be formulated thus: *Every axiomatic expression can be programmed, everything can be axiomatised and therefore everything can be simulated by computing.*

By contrast, as we saw earlier, for instance analogue, modular synthesisers are also electronic and synthetic like computers, but instead of discrete data, they generate continuous variation of the electric current and of the resulting sounds. More important here than continuity is the variability and immediacy of the synthetic process based on different, interacting modules, which produce electric voltage as output. The modules produce signals that are immediately sonic, without the programming and interpretation of a digital code. They can be infinitely modified, but these modifications alter the signals directly, instead of passing through a code. The variation in the output of a synthesiser is thus produced by a multiplicity of heterogeneous modules. That is, the output of the modules is 'synthesised' only in the sense that they interact immediately and produce a single output. They do not

communicate by a language or a code, but only in an immediate, physico-electric sense. (FB, 75–76)

Deleuze suggests that modulation is characteristic of analogical language or of the diagram (FB, 76). Modulation here means variation produced by a multiplicity of heterogeneous elements. Thus, it is essential at once that the variation is unified or rather consistent, but its production or generation is heterogeneous. This means that we cannot presuppose that any process of variation would have a single source, nor that the disparate elements would have a unified form or logic of communication as their condition.

According to Deleuze, analogical language is 'a language of relations, which consists of expressive movements, para-linguistic signs, breaths and screams, and so on' (FB, 74). Thus, analogical language is a non-linguistic mode of expression, which has an intensive structure, the diagram. It conveys a sensation, which is perfectly positive, but only as a degree or difference within a range of variation. However, this mode of expression is usually 'multimodal' or heterogeneous, so that even in the context of paintings it does not consist merely of variation of the shade of colour but for instance of sounds, attitudes and postures. Accordingly, the modular synthesiser is essentially analogical, because it traces a diagram, or an immediate, continuous, sensible variation, produced by a multiplicity of heterogeneous modules.

7.4 Digital language, decoding, information

Symbolic representation is for Deleuze and Guattari only the expression of the anthropomorphic stratum, although language does acquire an imperial role due to its superlinear power of representing and overcoding anything. Thus, for Deleuze and Guattari, computation as manipulation of symbolic information has no special role with regard to abstract machines as such, expressivity in general or the diagrams of abstract machines. However, computation has a special role as the expression of the

anthropomorphic stratum, as it combines the two articulations of technology and semiotics: computers involve materially advanced (i.e. conductive, powerful, fast) technology and they deploy a symbolic mode of operation. In particular, Deleuze and Guattari identify the computer as an expression and development of the *capitalist* mode of operation, or rather its mode of *communication*.

> But the capitalist use of language is of another nature and is realised or becomes concrete in the field of immanence peculiar to capitalism itself, with the emergence of the technical means of expression that correspond to the generalised decoding of flows [...] (AO, 286/240, transl. modified).

That is, according to Deleuze and Guattari, capitalism has always consisted in decoding flows and establishing new conjunctions between decoded flows and monetary flows (AO, 285–87). Digitalisation performs the same operation regarding information, and combined with computing power it is thus an apt instrument for controlling decoded flows.

Digitalised information is deterritorialised and decoded, for despite the obligatory element of representation, or rather indexation, between input and output, the symbolism is abstract to the extreme – 'the computer is an instantaneous and generalised decoding machine' (AO, 287). However, the digital code fixes and homogenises the mode of operation of this symbolism, and with it the decoded flows, making it conform to the axiomatic model.

According to Deleuze and Guattari, computers thus have a special relation to axiomatics as its physical and electronic medium. I mentioned already the homogeneity which makes digital computing susceptible to axiomatics. However, the most important feature of the positive functioning and effectivity of computing would seem to be *order*: computers provide a physical means for conveying axiomatic order. Still, the axiomatic order is only a form of organising, and it has no content in itself. This is undoubtedly conducive to the versatility of computers – they allow the transmission and processing of any information, provided that it is ordered as

electronic information. Furthermore, I argue that information is essentially a kind of order.

In fact, Deleuze and Guattari claim that information is pure order, mediated by another order. They refer to McLuhan, who in a similar vein suggests that the content of each medium is another medium:

> The content of writing is speech, just as the written word is the content of print, and print is the content of the telegraph. If it is asked, 'What is the content of speech?', it is necessary to say, 'It is an actual process of thought, which is in itself nonverbal'. (McLuhan, 1995 [1964], 8)

According to McLuhan, each medium in itself – e.g. light – is a flux of pure information and becomes articulate only when it is used to convey another medium, for instance writing. But what is the nature of this interaction between two media? Deleuze and Guattari identify this as a case of double articulation of content and expression. Media bear no meaning but operate by conjunctions of flows: the subordinate flow is the content that is mediated, and the mediating flow is the expression. Both flows are organised by the function of double articulation: one cannot simply transpose a flow of information into another one, but the content must be ordered in a particular manner, as a function of the expression. Moreover, the relation of content and expression is reciprocal, as expression does not overcode content but is in itself organised as a function of the content. Thus, according to Deleuze and Guattari, all media in themselves are pure, amorphous, decoded and deterritorialised flows of information, which gain a substance and form only in conjunction with other flows, establishing an articulation of content and expression (AO, 286).

7.5 Enslavement and creativity in the information age

Deleuze and Guattari are sceptical about the emancipatory potential of computers. They suggest that while at the concrete level of assemblages computers 'merely' subject (*assujettir*) or subjectify (*subjectiver*) individuals as users, at the axiomatic level they enslave (*asservir*) individuals, as they are rendered compatible with the axiomatics of the flow of information (MP, 573). Still, this 'axiomatic enslavement' is to be distinguished from the simple enslavement to the despotic mega-machine, where individuals are physical elements of the machine. Deleuze and Guattari speak of machinic enslavement (*asservissement machinique*) first as the subjugation of people in archaic, despotic systems, where humans are themselves constitutive parts of the machine (as well as animals and tools), under the control and direction of a superior authority. In social subjection (*assujettissement social*) on the other hand, the human being becomes a subject related to an external object (animal, tool, machine). In this case, a human being is no longer an integral component of a machine but a worker, a user. '[...] He is subjected *to* the machine, and no longer enslaved *by* the machine' (MP, 571). But with the advent of large-scale information technology, humans are once again in a relation of enslavement to the global network system of information. Still, the system is physically dispersed, so that from the point of view of the user or the 'model of realisation', the individual is still a subject operating the machine as an external object. (MP, 570–73)

Deleuze and Guattari place the modern machinic enslavement at the axiomatic level of information flow. In this 'axiomatic enslavement', one is physically free as a 'user', but one simultaneously necessarily conforms to the circulation of information. Physical, irreversible effort is thus substituted by the reversible flow of information by watching television or spending time online. Nevertheless, Deleuze and Guattari distinguish the homogeneity of capitalist axiomatics from the possible heterogeneity

and polymorphy of the models of realisation (MP, 569). That is, the force of capitalism lies especially in this capacity for absorbing a great multiplicity of heterogeneous activities and modes of being. According to Deleuze and Guattari, the only limit of capitalism is capital itself, and capitalism seeks to extend these limits into ever new sources of surplus value (MP, 579). The global financial crisis of 2007–2008 would seem to have been the manifestation of an internal limit of capitalism, while the imminent environmental crisis is an example of what is at the moment still an external limit.

Despite the idea of axiomatic enslavement involving cybernetics, Guattari is in his *Chaosmosis* from 1992 cautiously optimistic about the creative and liberating possibilities of information technology, which incidentally have also been realised to a large extent (shared data banks and contents, interactivity).

> [...] Everything depends on the articulation [of the machinic evolution of information technology] with collective assemblages of enunciation. At best there is the creation and invention of new Universes of reference; at the worst there is a mind-numbing mass-mediatisation to which billions of individuals are now condemned. (Guattari, 1992, 17/6)

Indeed, both alternatives seem to have already become a reality on the internet and in social media. However, the worst case scenario as envisaged by Guattari is arguably the dominant one at present, in the form of unprecedented possibilities of online marketing and propaganda. Nevertheless, it would seem that in contrast to mass media, the current 'post-mediatic' social media do not impose a single input on a large mass of people. Rather, the circulation of information on the internet can be characterised by Deleuze's term of 'modulation'; the information varies constantly and changes according to its recipient (PP, 242).

As we saw in Chapter 3, Deleuze and Guattari propose the synthesiser as the proper assemblage of the abstract machine of material variation in music, and furthermore as a model for philosophy as the 'synthesiser of thoughts', instead of the

subject of representations and judgments (MP, 423–24). Thus, the synthesiser embodies the analogical, diagrammatic machine, as opposed to the computer as the avatar of the encoded, digital and axiomatic machine. However, as Pierre Lévy has argued, even the computer itself is an assemblage of various heterogeneous components and the result of a contingent development (Lévy, 1989, 534–35). Indeed, it is the centralised information processing that primarily defines the role of the computer as a privileged operator of axiomatics for Deleuze and Guattari (cf. MP, 25). Nevertheless, with the dispersion of information technology, I have argued that its homogeneous digital form is what essentially makes widely distributed power by axiomatics, information and control possible.

By 'new universes of reference', Guattari refers essentially to artistic creation. Indeed, in Deleuze and Guattari's analyses, plastic or visual arts and music are essential experimental, deterritorialising and liberating forces, which mutate and transform existing habits. As Deleuze and Guattari suggest in *What Is Philosophy?*, visual arts produce such transformations in the form of sensations or 'percepts', while in music these transformations take the form of affects. However, I argue that as creative, the arts are always intrinsically technical and vice versa, creative technics is art. On the basis of Deleuze and Guattari's analyses, the main difference between technics and art is that technics immediately loses its liberating potential by becoming part of the social machine, while art maintains this potential. Naturally, due to its territorial mode of being, art may also be reterritorialised and trivialised as wallpaper or lounge music. However, I argue that in order to be truly creative, art needs to involve a machinic element, which alters the system in which it operates. Furthermore, I argue that due to this machinic, transformative character, creative art is intrinsically technical – 'for there is imagination only in a technique' (MP, 426). Indeed, Deleuze and Guattari propose the artisan as the modern figure of the artist. The artisan-artist is not primarily preoccupied with moulding a formless matter, nor with developing a form, but with modifying and interacting with heterogeneous

material variation as such. As we have seen, this interaction is based on the intrinsic, intensive dynamic structure of the material variation in question – its affects and singularities. However, these material dynamisms can only be known contingently through experimentation and intervention. Furthermore, due to the heterogeneity and intrinsic variation of the material basis of technics, the network of technics and technical knowledge as machinic, material operations thus remains intrinsically open to new circumstances and connections, leaving room for creativity.

Conclusion

In this work, I have argued that Deleuze's theory of intensity is central to his work as an account of the nature of materiality. Furthermore, I have argued that this theory can give us a profound understanding of technics as material knowledge and as an intrinsically creative endeavour.

The first task of this work was to develop an interpretation of Deleuze's theory of intensity in the context of his metaphysical system and his philosophy of technology. In Part I, I provided a comprehensive account of Deleuze's metaphysical theory of intensity. In Part II, I completed my first task of explicating the role of the concept of intensity in Deleuze's philosophy of technology. I have argued that the Deleuzean concept of intensity is important for our understanding of technics because intensity characterises the variability of material processes, and skilful interaction with material variability is crucial for all technics.

The second task of this thesis was to analyse the creative dimension of technics on the basis of the results of the previous discussion of the concept of intensity. The conclusion of my analysis was that technical creativity consists of the development of the intensive dimension of material variations. This result was grounded on three arguments: (1) intensity characterises the intrinsic, heterogeneous variations of material phenomena, (2) technical knowledge is essentially knowledge of such material phenomena, (3) intensity characterises the transformability of material systems. On the basis of these arguments, I have concluded that the technical engagement with heterogeneous material variations also necessarily involves a systemic dimension of

creative transformation. I have argued that this intensive dimension is the core of technical creativity.

In what follows, I will recapitulate the key findings of this work and demonstrate how they support my principal arguments.

Intensity

The main objective of Part I was the explication of Deleuze's theory of intensity. In chapter 1, I discussed Deleuze's theory of intensity in his early work, where it is explicitly formulated, foremost in *Difference and Repetition*.

We saw that intensity characterises sensible, material variations in their immediacy. In order to clarify the intrinsic nature of dynamic, material variations, it was necessary to discuss classic analyses of the concept of intensity and intensive quantity, beginning with Aristotle's formulation of the alteration and degrees of a quality and the scholastic theories inspired by Aristotle. As we saw, Nicole Oresme's concept of *latitude of form* gave the spark to the new quantitative formulations of qualitative variation. I have argued that the most important invention of the early theories of intensity was the gradation of variation. The gradation of intensity is manifest in the custom of speaking of the individual degrees of variation as 'intensities'. Furthermore, 'intense' and 'intensive' are commonly associated with high degrees of intensity. Against the common conceptions, I have argued that the essential object of the analysis of intensity is the *dimension* of gradual variation, not the degrees as such.

As we have seen, the idea of gradation implies notions of *more* and *less*, and indeed, since Oresme's theory in the fourteenth century, the problematics of intensity has always involved considerations of *quantity*. I showed that for Deleuze, intensity is not simply a qualitative dimension. This is the central feature that distinguishes Deleuze's account from that of Bergson. I further demonstrated that through his new

concept of intensity, Deleuze reformulates several key aspects of Bergson's theory of duration. However, Bergson himself set his concept of duration precisely against all quantitative modes of thinking, which he assimilated to spatial representations. Duration for Bergson, by contrast, constitutes qualitative wholes which are not divisible into constituent parts in the same manner as spatial wholes.

We saw that Deleuze, in contrast to Bergson, sees the essential difference not between quality and quantity but between two types of quantity: intensive and extensive. Extensive quantity is defined as *partes extra partes*; it can be indefinitely divided into homogeneous units, which are independent of one another. By contrast, intensive quantity is defined as a degree that is not based on a unit of measurement, but on the distance from a zero degree.

I have argued that Deleuze adopts his basic definition of intensive quantity from Immanuel Kant. Kant already defined the intensive quantity (or more precisely, *intensive magnitude*, Ger. *intensive Größe*) by its distance from a zero degree. Furthermore, Kant also understood intensive quantities as instantaneous, meaning that they are perceived in single moments and cannot be divided into parts like extensive magnitudes. However, I explicated an important specification that Deleuze adds to Kant's original definition: intensive quantities can be divided, but the divisions necessarily lead to qualitative changes in the phenomena. For this reason, I have put forth a new complementary definition of intensive quantity: *an intensive quantity is a heterogeneous whole.*

However, my work demonstrates that Deleuze does not merely analyse the nature of intensive quantities, but more importantly, the concept of intensity has a central role in his metaphysical system. First, in *Difference and Repetition*, Deleuze defines intensity as the 'essence of the sensible'. He analyses the intensive essence of the sensible from two principal perspectives, which I called tentatively 'subjective' and 'objective' in Section 1.2. More precisely, these perspectives are: (1) the perspective of sensation, (2) the perspective of individuation in dynamic systems. Furthermore,

I have demonstrated how Deleuze's early theory of passive syntheses and Deleuze and Guattari's later theory of affectivity combine these perspectives by conceiving systems of immediate and interactive, sensuous materiality.

First, from the point of view of sensation, we saw that Deleuze defines intensity paradoxically as the 'non-sensible which can only be sensed' (DR, 305). As I demonstrated, this means that intensity is essentially sensuous, but that it can also be said to be pre-sensible or non-sensible in the sense that it does not constitute an object of conscious perception. Furthermore, the transformative potential of intensity is also manifest in Deleuze's assimilation of intensity to disruptive sensations, which exceed our normal, conscious and habitual perceptions. I demonstrated that the objective of his analysis was to show that extreme sensations operate as the power that forces us to think, due to the disruption of the normal functioning of the mental faculties and of their harmony.

Individuation and machinic, heterogeneous systems

My work shows that in addition to the perspective of immediate sensation, the concept of intensity also has a more objective and systemic role as the individuating factor of dynamic systems. We saw that in *Difference and Repetition* the individuating, genetic function of intensity is initially discussed separately from its experiential function in sensations. I explicated the nature of dynamic systems and the individuating role of intensity by discussing the examples of crystallisation and ontogenesis. Furthermore, in Section 1.5, I explicated the roots of Deleuze's theory of the individuation of dynamic systems in Gilbert Simondon's work. We saw that extensity characterises the extended parts and qualitative properties of individuals. By contrast, Deleuze assimilates intensity to the dynamic space in which individuation happens, in his own words, to *the egg*. According to Deleuze, the egg is an intensive quantity and an intensive space insofar as it manifests a multiplicity of potentials in a process of becoming and developing into something new.

This motivates the other new definition of intensity I have proposed in this work: *intensity is the quantity of potential*. I have demonstrated that this fundamentally potential nature of intensity does not preclude its fundamentally sensuous character. As we have seen, the sensuous character of intensive potentials is manifested as processes and affectivity. I have argued that the potential nature of intensity makes it easy to ignore the intensive dimension of phenomena altogether and reduce phenomena to their extended parts and qualitative properties. The advantage of such a conception is of course that in the extensive perspective, phenomena are directly measurable and representable. I have argued that this is the reason why the extensive perspective dominates in philosophical discussions and human thought more generally, and that this is convenient to us because extensions and qualities constitute possible objects of conscious thought and perception. Against this common conception, this work puts forward the view that intensities essentially manifest as processes and variations and are therefore more difficult to observe, conceive and represent than extensive properties.

In Chapter 2, I discussed the role of intensity in Deleuze's later thought, especially in the monograph *A Thousand Plateaus*, which he wrote together with Félix Guattari. I showed that this work marked a transformation in Deleuze's thinking: he moved from the dynamic, natural models of individuation towards the analysis of transformable multiplicities. I have argued that this shift is accompanied by the introduction of two new key concepts: (1) the assemblage and (2) haecceity.

First, I have argued that an assemblage is essentially a heterogeneous, transformable system. Furthermore the 'machinic' character of assemblages refers to their fundamentally contingent and connective nature. In contrast to Deleuze's earlier interest in dynamic natural processes, in *A Thousand Plateaus*, Deleuze and Guattari interpret the natural examples of individuation, for instance crystallisation and ontogenesis, in terms of *stratification*. Moreover, we saw that stratification covers the more regular, repetitive patterns of reality, while assemblages cover the

creative transformations and variations of these habitual patterns, and that Deleuze and Guattari refer to these transformative processes as 'deterritorialisation' and 'destratification'. I argued that this heterogeneous, transformative potential of assemblages essentially depends on their machinic character.

Second, I have argued that in *A Thousand Plateaus*, Deleuze's earlier theory of individuation is reformulated in terms of the concept of *haecceity* or 'thisness'. As we saw, this reformulation further emphasised the perspective of a systemic, intensive potential, in contrast to the earlier perspective of generative processes. Moreover, I showed that the two dimensions of a haecceity – the longitude of kinetic relations and the latitude of affects – allowed Deleuze to combine elements from Spinoza's theory of affectivity as an expression of individuality and from Oresme's theory of the intensive latitude of forms.

I have demonstrated that in his early work, Deleuze seeks to integrate the perspective of sensations and the perspective of generative processes through his theory of passive synthesis. This philosophical project was introduced in Chapter 1, and discussed in detail in Chapter 3. I have shown that for Deleuze, passive syntheses happen in the realm of intensities, but these syntheses also produce the conscious, active syntheses. Furthermore, we saw that each synthesis involves an elementary consciousness. I argued that through the concept of a passive, elementary consciousness, Deleuze expresses the idea that a passive synthesis is part of a self-regulating process of individuation. I also drew attention to the fact that from the Deleuzean perspective, sensation is also a passive synthesis, enfolding a conglomeration of more basic passive syntheses.

In Chapter 3, I have traced in detail the change in Deleuze's thought from his own early work to *A Thousand Plateaus* co-written with Guattari. I argued that this change consists of the shift in focus from unconscious syntheses to the machinicity of multiplicities. More precisely, this means that in *A Thousand Plateaus*, the authors analyse desiring processes in terms of their heterogeneous connectivity and systemic

transformability and do not study them anymore from the point of view of their genetic constitution, as in Deleuze's earlier works and also in their first joint work, *Anti-Oedipus*. The analysis of Chapter 3 also produced the finding that the machinic logic of systemic transformability is already present in the theory passive syntheses as the third synthetic moment, which concerns the whole of a system. I argued that in *A Thousand Plateaus* the third, machinic moment is separated from the constitutive perspective of the syntheses in order to emphasise the contingent and creative nature of machinicity.

Intensive Technics

In Part II, I interpreted Deleuze and Guattari's philosophy of technology in light of Deleuze's theory of intensity. It is a key argument of this thesis that intensity as a degree of gradual variation characterises all materiality in its intricate immediacy. Accordingly, I have argued that the interaction with the intensive aspect of materiality is the core of technics.

Technology has usually been conceived as an instrument of science or more generally, as the aggregate of all the instruments of human endeavour. By contrast, I have argued that it is necessary to take an intrinsic point of view to technics and study its inner working. This intrinsic point of view studies technics as an immediate, material form of knowledge and as a mode of being in its own right, not merely as an instrument which is subservient to interests and goals extrinsic to it.

In Chapter 4, I examined the most important elements of a Deleuzean philosophy of technology and its relation to other theoretical and historical accounts of technology. I have argued that experimentation is a key concept in Deleuze's approach to the nature of creativity, and this holds both for his account of thinking as well as his account of technics. Moreover, I have argued that the centrality of the concept of experimentation in Deleuze's works demonstrates how important the

theme of technics is for his theorisation. Namely, from a Deleuzean point of view, if thinking is to have an impact on human existence, it is not by creating more accurate descriptions and representations, but by experimenting with reality.

In Chapter 5, I studied the pragmatist and materialistic dimensions of Deleuze and Guattari's epistemology and philosophy of technology. Deleuze and Guattari only rarely refer to pragmatist philosophers, but I have argued that the philosophical accounts of the pragmatists have been important to them in providing the most prominent theories of the concrete, practical side of knowledge and science. For this reason, it was crucial to study the similarities between the pragmatists' and Deleuze and Guattari's views, as well as the contribution that Deleuze and Guattari make to the pragmatist approach.

We saw that Deleuze and Guattari themselves used the term 'pragmatic' in the linguistic sense of *pragmatics*. Important here was the pragmatic focus on the immediate context of language use and the situation of utterances or speech acts, in contrast to traditional linguistics, structuralism in particular, which focuses on the general syntactic and semantic structures of language. In Deleuze and Guattari's sense, the pragmatic dimension characterises the concrete processes and activities in which utterances are embedded. I have argued that we must also interpret science and knowledge along similar lines and understand scientific statements and theories as expressions that always accompany or are accompanied by concrete, pragmatic operations. The acknowledgment of this pragmatic dimension of knowledge and science allows us to illuminate the role of technics in them: scientific inventions always imply technical, operational inventions. These inventions may appear as concrete instruments but also as formal operations.

I have argued that Deleuze and Guattari's main contribution to pragmatism is their analysis of the materiality of thought and knowledge. For instance, we have witnessed their analysis of ancient metallurgy as immediate interaction with material variation. We saw that for them, this material variation manifests in two

primary dimensions: as singularities and as expressive traits. Singularities constitute thresholds and significant structural elements, the dynamic structure of the material, while expressive traits are immediate expressions of this structure and of the behaviour of the material. We saw in Section 2.3 how these two dimensions correspond to the two Spinozan dimensions of bodies, that is, kinetic relations and affectivity. Although Deleuze and Guattari associate only the second dimension, i.e. the dimension of expressive, affective traits with intensity, I argued that intensity is the mode in which both these aspects of materiality – singularities and expressive traits – are encountered in their immediacy. The reason for this was first of all that only the affective, expressive traits are properly immediate. Second, I argued that the dynamic structure of a material with its singularities can only appear through the intensive variation of the expressive traits.

In Chapter 6, I argued that Deleuze and Guattari attribute two principal perspectives to technics: (1) the creative continuum of *phyla*, and (2) the social determination of technical machines and technical elements. Technical creativity always entails an immediate interaction with the *phylum*, with its singularities and expressive traits, but at the same time the mode of being of all technical instruments is always determined by some particular social assemblages.

We also saw that for Deleuze and Guattari, several different social assemblages are always intertwined in a given society. In this context, Deleuze and Guattari distinguish the state apparatus and the war machine as the two main types of political assemblage. Both types of assemblage involve technical instruments, and Deleuze and Guattari analyse the nature of the instruments in affective terms. The characteristic affect of the sedentary state apparatus is the centripetal movement of a tool in the context of labour. By contrast, the characteristic affect of the nomadic war machine is the centrifugal movement of the weapon. I examined Deleuze and Guattari's disturbing claim according to which creativity and transformation are profoundly linked with war. I argued that this association must not be interpreted

as a rejection of creativity and social transformation, nor as a sanctification of war and violence. I argued that Deleuze and Guattari's analysis allows us to realise in a subtler way both the complex nature of war and the fundamentally ambiguous nature of creation and transformation. Understanding this complexity and ambiguity is especially important in the context of technics, which is both a central manifestation of human creativity but has also catalysed destruction inflicted on human beings as well as on animals and their common environment.

Following the example of various authors, I distinguished three main phases in the development of technology from the Renaissance to the twentieth century and beyond: (1) mechanical machines, (2) energetic machines and (3) information machines. These phases correspond to profound changes in concrete social and industrial structures, as well as in dominant world views and ideologies. However, the characteristic technology of each phase is merely the dominant technology of its age. Accordingly, the earlier phases still influence our lives and have important effects in our contemporary world.

In Chapter 7, I focused my discussion on those aspects of Deleuze and Guattari's philosophy of technology that are most relevant to the contemporary analysis of technics. I have argued that the most prominent aspect of late modern technology for Deleuze and Guattari is its relation to capitalism. As we have seen, large-scale technical changes involve changes in socio-economic interests and in the structure of society and power. Mechanical machines emerged in societies of sovereignty, energetic machines in societies of discipline and cybernetic machines in contemporary societies of control (PP, 237). According to Deleuze and Guattari, our contemporary world is dominated by information technology and the corresponding form of power. We saw that Deleuze calls this form of power 'control': power as control is not based on direct physical coercion or confinement in an institution (a factory, a school, a prison), but on *information*.

We saw that Deleuze and Guattari claim that capitalism operates by axioms which by nature are independent of each other and can be added indefinitely. Most importantly, axiomatics organises reality in terms of abstract elements or variables and their generic relations. In so doing axiomatics allows for significant heterogeneity among the phenomena and activities it organises and controls. We saw that axiomatics differs essentially from what Deleuze and Guattari call 'codes', meaning local principles of organising activities. Their principal example of codes is the organisation of primitive societies, for instance by codes of exchange and social relations. By contrast, axiomatics is always universal. Moreover, I have argued that axiomatics in itself is a homogeneous system, but its concrete *models of realisation* manifest almost limitless variation and heterogeneity. This dual nature of axiomatics also allows us to understand how capitalism is able to include ever new domains of life in the global market without imposing strict conditions of uniformity, except at the level of principle.

On the basis of the results of my analysis of intensity and technical creativity, in Chapter 7, I examined the possibilities of finding alternatives to the axiomatics of contemporary capitalism and information societies. From a formal point of view, I have argued that the alternative forms of action must first of all be based on the heterogeneity of systems. Furthermore, given that the dominant model of power and technology is dependent on information, I have argued that its alternatives must proceed along two possible paths. (1) Through the deployment of a heterogeneous form of information, in contrast to the *a priori* homogeneity of digital information. (2) Through the creation of new artistic, scientific and technical or pragmatic modes of being and acting, based on information technology. With respect to the first alternative, I argued that the *analogue synthesiser* constitutes such an alternative, insofar as it is constituted by the heterogeneous modulation of an electric current which produces a varying stream of sound. I pointed out that in Deleuze and Guattari's terms both these paths can be characterised as *diagrammatic*, insofar as

they require that we follow and trace analogue material variations and divert from the homogeneity of the digital code.

Creative, intensive technics

The main argument of this work concerning intensity is that *intensity is the intrinsic mode of being of heterogeneous wholes*. On the basis of this claim, I have argued that analysing the nature of intensity allows us to better understand complex systems. Approaching systems by their intensive aspects – I have called this 'the intensive perspective' – provides an alternative to the prevailing organismic model of systems, which represents systems as homogeneous, hierarchical, and centrally organised. By contrast, if we approach a system as an intensive whole, its parts must be seen in terms of their heterogeneity and affective, transformative potential. The individuality or identity of such an intensive collective only manifests as its mode of being – Deleuze and Guattari call this its 'haecceity'. I have argued that this intensive, intrinsic mode of a particular system can only be understood and experienced from the point of view of a part of the system, which engages and interacts with it, within it. In this sense, the concrete existence of an intensive system is necessarily machinic in Deleuze and Guattari's sense and, I have argued, also necessarily technical. Vice versa, I have argued that this intensive perspective on systems is essential to all technics *qua* material interaction. I have argued that the interactive, assembling nature of technics forms the basis of its transformative, creative potential.

The first task of this thesis was to provide an explication of Deleuze's theory of intensity and to show its importance to our understanding of the nature of technics. In the course of this work, I have established several key properties of intensity. First, intensity is the dimension of gradual, heterogeneous variation within phenomena. We have seen the importance of this alternative perspective for our conceptualisation of technics, which consists of immediate interaction with such material variations.

Furthermore, I have argued that it is only from within such material variation that the dynamic structure and reactions of the material can be discovered.

The second principal task of this work was to analyse the intrinsic creativity of technics based on the interpretation of Deleuze's theory of intensity that was presented in Part I. Studying Deleuze and Guattari's philosophy of technology, we encountered a fundamental dualism: technics is both creative and socially determined. Technics is intrinsically creative and forms a contingent material continuum, and Deleuze and Guattari call this continuum 'the phylum'. However, technics is according to them always determined by the particular mode of being of a social assemblage. In the framework of this thesis, I could only offer a brief account of the mutual relation of these two dimensions, which allowed me to focus the discussion on Deleuze and Guattari's theory of the creative aspects of technics. The tension between these two dimensions is an interesting philosophical topic for future research.

We have seen that for Deleuze and Guattari, capitalism is a fundamental element in social dynamics. They characterise capitalism by the concept of *deterritorialisation*. The term refers to transformative powers which detach beings from their territorial codes. I have argued that for Deleuze and Guattari capitalism is a creative social force, but this creativity is limited by its axiomatic form, which imposes a homogeneous mode of organisation. I have also suggested that creative, non-axiomatic solutions will emerge from the realm of intensity, from the immediacy of material variations, and that these must be traced and combined in novel ways for systematic changes to become possible. We studied this possibility through the example of the analogue synthesiser, which is for Deleuze and Guattari the prime model of a heterogeneous technical assemblage. The example of the synthesiser is illuminative for two related reasons, for its transformative role in music and for its roughly simultaneous development with the computer.

I have argued that in Deleuze and Guattari's philosophical framework, technical creativity consists in the transformation of existing assemblages by following material variations and establishing new connections between them. Such creative, technical transformation is essentially carried out by engaging in heterogeneous, intensive systems.

Yhteenveto (Summary in Finnish)

Tutkielmassa selvitetään Gilles Deleuzen (1925–1995) intensiivisyyden käsitettä ja sen roolia Deleuzen metafysiikassa ja tekniikan filosofiassa. Intensiivisyyden käsitteen tärkeys Deleuzen filosofiassa on aiemminkin huomioitu kommentaarikirjallisuudessa, mutta tutkimus on rajoittunut yksittäisiin teoksiin, eikä käsitteen systemaattista roolia Deleuzen metafyysisessä järjestelmässä ole aiemmin selvitetty. Tällaisen kokonaiskatsauksen puutteesta johtuen intensiivisyyden tärkeä rooli Deleuzen tekniikan filosofiassa on jäänyt huomaamatta. Lisäksi Deleuzen teosten tekniset teemat ja käsitteet on usein tulkittu metaforisesti. Tämä tutkielma korjaa näitä puutteita osoittamalla intensiivisyyden ja tekniikan keskeisen roolin Deleuzen ajattelussa.

Tutkielma pyrkii vastaamaan kahteen pääkysymykseen. (1) Mikä on intensiivisyyden käsitteen rooli Deleuzen metafyysisessä järjestelmässä ja hänen tekniikan filosofiassaan? (2) Miten intensiivisyys materiaalisuuden välittömänä luonteena voi auttaa ymmärtämään tekniikkaan sisältyvää luovaa potentiaalia?

Työn tutkimuskirjallisuutena on ennen muuta Deleuzen koko tuotanto, mukaan lukien yhdessä Félix Guattarin kanssa kirjoitetut teokset. Painopiste on varhaiskauden pääteoksessa *Différence et répétition* (1968*a*, engl. *Difference and Repetition*) sekä Guattarin kanssa kirjoitetussa myöhemmän kauden pääteoksessa *Mille Plateaux* (1980, engl. *A Thousand Plateaus*). Keskeisenä lähdeaineistona on myös Deleuzen ajattelua jäsentäviä ja tulkitsevia teoksia, Deleuzen kommentoimia filosofisia teoksia sekä tekniikan historiaa ja sosiologiaa käsitteleviä teoksia. Deleuzen omista filosofisista lähtökohdista tutkin tarkimmin Baruch Spinozan (1632–1677),

Henri Bergsonin (1859–1941) ja Gilbert Simondonin (1924–1989) ajattelua. Lisäksi selvitän Deleuzen tekniikan filosofiaa pragmatistisen perinteen valossa.

Työ jakautuu kahteen osaan, jotka sisältävät yhteensä seitsemän lukua. Ensimmäinen osa keskittyy intensiivisyyden käsitteen selvittämiseen ja toinen Deleuzen tekniikan filosofian tulkitsemiseen. Johdantoluvun jälkeen osan I ensimmäinen luku "The concept of intensity in Gilles Deleuze's early philosophy: sensation and individuation" jäsentää intensiivisyyden roolia Deleuzen varhaisfilosofiassa, erityisesti *Différence et répétition* -teoksessa. Valotan intensiivisyyden, intensiteetin sekä intensiivisen määrän (*quantité intensive*, engl. *intensive quantity*) käsitteiden historiallista taustaa. Intensiivisen määrän käsite muotoiltiin alun perin keskiajan skolastiikassa, jossa sen avulla jäsennettiin kvaliteettien eli laatujen asteittaista vaihtelua: monilla laadullisilla ominaisuuksilla näyttää olevan useita eri asteita eli intensiteettejä. Niinpä nykyäänkin termodynamiikassa puhutaan systeemien "intensiivisistä ominaisuuksista", joita ovat esimerkiksi lämpötila ja paine. Intensiivisestä vaihteluvälistä käytettiin skolastiikassa termiä "latitudi" (lat. *latitudo*). Myöhemmin Immanuel Kant (1724–1804) taas luonnehti intensiivistä määrää empiirisen aistimuksen perustavaksi piirteeksi. Esitän, että Deleuze ei Kantin tavoin rajoita intensiivisyyttä tiedon ja havainnon piiriin vaan näkee sen materiaalisuuden välittömänä luonteena ja olemisen tapana. Intensiivisyyden olennainen piirre on Deleuzen mukaan sen heterogeenisyys: intensiivinen muutos on aina määrällistä ja kvantitatiivista mutta tuottaa aina myös laadullisen muutoksen, tai tarkemmin ottaen muutoksen systeemin olemisen tavassa.

Intensiivisyyden käsitteellä on jo Deleuzen varhaisessa ajattelussa useita eri käyttöyhteyksiä: intensiivisyys luonnehtii välitöntä aistimusta mutta myös dynaamisen järjestelmän liikkeelle panevaa voimaa. Esitän, että varhaistuotannossaan Deleuze tuo nämä aistimuksen ja dynaamisten prosessien näkökulmat yhteen *passiivisen synteesin* käsitteen avulla. Myöhemmin *Mille Plateaux* -teoksessa affektiivisuuden kä-

site vuorostaan saa tällaisen välittömän aistimisen ja toiminnallisuuden yhdistävän merkityksen.

Dynaamisia järjestelmiä passiivisine synteeseineen ohjaa Deleuzen mukaan aina jokin yksilöitymisen (*individuation*) prosessi. Deleuze pohjaa varhaisen yksilöitymisteoriansa vahvasti aikalaisensa Gilbert Simondonin teorialle, jonka keskeiset ajatukset esittelen tutkielmani ensimmäisessä luvussa. Deleuze omaksuu Simondonilta useita käsitteellisiä työkaluja, jotka jäsentävät ilmiöiden syntyprosessia systeemisestä näkökulmasta.

Deleuzen intensiivisyyden ja yksilöitymisen käsitteisiin on vaikuttanut vahvasti myös Spinozan ajattelu. Deleuze kehittelee näitä teemoja jo varhaisteoksessaan *Spinoza et le problème de l'expression* (1968*b*), mutta Spinozan vaikutus Deleuzen omaan ajatteluun ja käsitteistöön näkyy kunnolla vasta teoksessa *Mille Plateaux*. Spinozan filosofia muodostaakin sillan Deleuzen varhaisen ja myöhäisen filosofian välille, erityisesti intensiivisyyden ja yksilöitymisen teemojen osalta. Deleuzen myöhemmässä filosofiassa intensiivisyys näyttäytyy erityisesti spinozalaisen affektiivisuuden teeman kautta. Yksilöitymistä taas käsitellään keskiaikaisen *tämyyden* (*heccéité*, lat. *haecceitas*) käsitteen avulla, jolle Deleuze antaa hyvin spinozalaisen muotoilun ulottuvaisen näkökulman ja affektiivisen näkökulman yhdistelmänä.

Toisessa luvussa "Intensity in the ontology of *A Thousand Plateaus*" selvitän intensiivisyyden käsitteen roolia Deleuzen myöhäiskauden pääteoksessa *Mille Plateaux*, joka on Guattarin kanssa kirjoitetun *Kapitalismi ja skitsofrenia* -teosparin jälkimmäinen osa. Esitän, että kyseisessä teoksessa intensiivisyys luonnehtii muutoksellisia ja vapauttavia prosesseja ja kytkeytyy läheisimmin affektiivisuuden ja koneellisuuden keskeiskäsitteisiin. Intensiivisyys jäsentää edelleen materiaalista välittömyyttä ja systeemistä muutosta, mutta jälkimmäinen näkökulma korostuu *Kapitalismi ja skitsofrenia* -teosparissa aiempaa enemmän. Erityisesti systeemisiä muutoksia ei enää käsitellä luonnonilmiöiden näkökulmasta vaan ensisijaisena viitekehyksenä on yhteiskunta ja inhimillinen kulttuuri. Niinpä Deleuzen aiemmin tarkastelemat

luonnolliset yksilöitymisprosessit, kuten kiteytyminen ja biologinen yksilönkehitys, eivät enää näyttäydy luovina prosesseina vaan Deleuze ja Guattari kuvaavat niitä vakiinnuttavan ”kerrostumisen” (*stratification*) eri muotoina, joita erilaiset luovat prosessit toisaalta jatkuvasti purkavat ja muovaavat.

Kolmannessa luvussa ”From syntheses to synthesisers” esitetään perusteellinen katsaus Deleuzen synteesin käsitteen kehitykseen. Synteesin käsite on keskeisessä osassa Deleuzen varhaisfilosofiassa, mutta esitän, että teoksessa *Mille Plateaux* koneellinen näkökulma syrjäyttää synteettisen. Deleuze ja Guattari pyrkivät tämän käsitteellisen muutoksen kautta jäsentämään luovuutta erilaisten järjestelmien avoimena kytkeytyvyytenä, kun taas Deleuzen aiemmissa teoksissa ja vielä *Anti-Oidipuksessa* (*L'Anti-Œdipe*) muutos ja luovuus tuntuivat kumpuavan järjestelmistä itsestään ja niiden synteettisistä prosesseista. Väitänkin, että synteettinen yksilöityminen vaihtuu koneelliseen avoimuuteen ja kytkeytymiseen.

Tutkielman neljäs luku ”Philosophy of technology and Deleuze's approach to technicity” aloittaa osan II, joka keskittyy Deleuzen tekniikkaa koskevaan ajatteluun. Neljännessä luvussa eritellään aluksi Deleuzen tekniikanfilosofisia teemoja Daniel W. Smithin muotoileman jaottelun pohjalta. Tarkennan myös tekniikkaa koskevaa englanninkielistä käsitteistöä ja esittelen perinteisiä filosofisia käsityksiä teknisen tiedon suhteesta muunlaiseen tietoon. Lisäksi sivuan analyyttisessa tekniikan filosofiassa keskeisiä artefaktin ja funktionaalisuuden käsitteitä. Tuon esiin, että Deleuzen mukaan keinotekoisuus ja artefakti ovat vain suhteellisia käsitteitä, jotka eivät tavoita tekniikan ja ihmisen tuottavan toiminnan olennaista luonnetta. Deleuze ja Guattari eivät nimittäin analysoi tekniikkaa itsenäisenä ilmiönä vaan aina osana jotakin konkreettista, koneellista, yhteiskunnallista asetelmaa. Toisaalta analyyttisessa filosofiassa paljon käytetyt funktionaalisuuden ja disposition käsitteet muistuttavat tietyin osin hyvin paljon Deleuzen affektiivisuuden käsitettä. Nämä kaikki käsitteet pyrkivät jäsentämään toisiinsa kiinteästi kytkeytyvien tapahtumien välisiä suhteita. Väitän kuitenkin, että olennaisena erona on se, että Deleuze ei alista affek-

teja ulkoiselle kielelliselle tai propositionaaliselle viitekehykselle vaan pyrkii affektin käsitteen avulla lähestymään ilmiöiden dynamiikkaa ja toimintaa sisältä käsin.

Viidennessä luvussa ”Pragmatism and materialism of knowledge” selvitän Deleuzen ajattelun yhtymäkohtia amerikkalaisen pragmatistisen perinteen kanssa ja perustelen määritelmääni, jonka mukaan tekniikka on materiaalista tietoa. Olennaisena yhtymäkohtana Deleuzen ja pragmatismin välillä on tiedon tarkasteleminen käytäntöjen ja toiminnan näkökulmasta. Deleuze ja Guattari puhuvatkin ”pragmatiikasta” kielitieteellisessä mielessä kielenkäytön tilannekohtaisina, konkreettisina tekijöinä. Tältä pohjalta esitän, että kaikkeen tietoon kytkeytyy materiaalinen toiminnallisuuden ulottuvuus, joka näyttäytyy *operaatioina* eli toimituksina tai toimenpiteinä. Tiedon toiminnallisuus painottuu myös Cartwrightin ja Hackingin esityksissä, jotka molemmat korostavat kokeellisten interventioiden merkitystä tieteellisen tiedon muodostumisessa.

Pragmatismin käsittelyn jälkeen esitän viidennessä luvussa määritelmän tekniikasta materiaalisena tietona. Osoitan myös, että pragmatistisesta epistemologiasta ja tieteenfilosofiasta puuttuu tällainen materiaalinen näkökulma tietoon, ja Deleuzen ja Guattarin tekniikan filosofia täydentää niitä tässä suhteessa. Deleuze ja Guattari nimittäin lähestyvät tekniikkaa materiaalisena tietona ja tuovat samalla esiin kaikkeen tietoon sisältyvän materiaalisuuden. Väitän, että tiedon materiaalisuus näyttäytyy meille olennaisesti toiminnallisuutena ja operoivuutena. Deleuzen ja Guattarin analyyseissa tekniikka ja tekninen tieto ovat ensisijaisesti vuorovaikutusta konkreettisten, aineellisten prosessien kanssa. He kuvaavat aineen dynaamista rakennetta affektiivisuuden ja singulaarisuuden käsitteiden avulla. Singulaarisuudet ovat erityisiä piirteitä materiaalisessa varioinnissa – taitekohtia tai poikkeamia materiaalin rakenteessa. Affektit taas ovat tapoja reagoida erilaisiin toimenpiteisiin ja niiden välittömästi näyttäytyvä asteittainen vaihtelu on olennaisesti intensiivistä. Esitän, että tämä intensiivinen, materiaalinen affektiivisuus on teknisen toiminnan ensisijainen viitekehys.

Kuudennessa luvussa ”Social machines and technics” jäsennän tekniikan yhteiskunnallista luonnetta. Esittelen Deleuzen ja Guattarin tekemät erottelut erilaisten koneiden ja teknisten olioiden välillä. He käyttävät arkimerkityksen mukaisista koneista nimitystä ”tekninen kone” ja tarkastelevat tällaisia koneita sekä muita teknisiä välineitä ja esineitä olennaisesti aina osana jotakin asetelmaa (*agencement*), joka määrittää niiden luonteen. ”Abstraktilla koneella” Deleuze ja Guattari taas tarkoittavat järjestävää toimintaperiaatetta, joka antaa asetelmalle sen ominaislaadun ja yksilöi asetelman. Abstrakti kone ei kuitenkaan tyhjene tiettyyn vallitsevaan järjestykseen, vaan se sisältää mahdollisuuden muutokseen ja uudistumiseen. Niinpä tekniikka määrittyy aina osana tiettyä yhteiskuntajärjestystä ja asetelmaa, mutta siinä piilee myös luova, materiaalinen jatkumo, joka kykenee muuttumaan ja joka kulkee eri asetelmien ja tekniikan vaiheiden halki. Deleuze ja Guattari käyttävät tästä piilevästä materiaalisesta jatkumosta termiä *phylum* (pääjakso, kehityshaara, vrt. ”fylogeneettinen”). Näin he liittävät tekniikkaan kehityksellisen näkökulman, mutta lisäksi kytkevät tekniikan osaksi luonnon evoluutiota sen ”eksodarwinistisena” kehityskulkuna. Tästä näkökulmasta tekniikka on kiinteä osa ihmisen mukautumista ympäröiviin olosuhteisiin. Deleuzen ja Guattarin esityksessä luovuuden mallina on käsityöläisyys ja erityisesti metallurgia, joka seuraa materiaalisten prosessien välitöntä vaihtelua, niiden affekteja ja singulaarisuuksia.

Kuudennessa luvussa selvitetään myös *Mille Plateaux* -teoksen kahta keskeistä asetelmatyyppiä: valtiokoneistoa (*appareil d'État*) ja sotakonetta (*machine de guerre*). Sotakone on olennaisesti Deleuzen ja Guattarin yhteiskunnallinen malli luovuudelle. Sotakoneen luovuuden ensisijaisena muotona ei sen sijaan ole ”luovan tuhon” levittäminen, vaan sotakone luo uutta levittäytymällä avoimeen tilaan nomadien tavoin. Valtiokoneisto taas edustaa vakiintunutta järjestystä. Selvitän näiden asetelmien teknistä ja affektiivista luonnetta.

Viimeisessä, seitsemännessä tutkimusluvussa ”Computers, capitalism and technical creativity” analysoidaan tekniikan asemaa nykykulttuurissa edellisten luku-

jen intensiivisen tekniikan analyysin valossa. Deleuze ja Guattari nimeävät nykyyhteiskunnan määrääväksi voimaksi kapitalismin ja sen *aksiomaattisen* toimintalogiikan. Kapitalismi on heidän mukaansa olennaisesti maailmanlaajuista, sillä sen aksiomatiikka muodostaa rahan välityksellä yhteismitallisen rajapinnan heterogeenisten kulttuuristen ainesten ja toimintatapojen välillä. Näin se ei ole sidottu mihinkään tiettyyn alueeseen tai kulttuuriin, ja toisaalta sen kasvaminen edellyttää jatkuvasti uusia aluevaltauksia. Esitän, että informaatiotekniikasta on tullut elimellinen osa kapitalistista yhteiskuntaa juuri sen takia, että se toimii olennaisesti saman aksiomaattisen logiikan mukaan kuin kapitalismi, joskin sen välineenä on informaatio. Toisin sanoen informaatio on homogeeninen väline, joka toimii eriluontoisten kulttuuristen ainesten ja toimintamallien välittäjänä ja yhteyspintana. Deleuzen ja Guattarin mukaan informaation hallitsevuus tuo mukanaan kontrolliin perustuvan vallan. Toisin sanoen vallankäyttö ei enää olennaisesti perustu ruumiilliseen väkivaltaan eikä liikkumista rajoittaviin laitoksiin vaan yksilöitä koskevaan tietoon ja dataan. Analysoin luvussa myös aksiomatiikan homogeenisuutta suhteessa koodeihin ja digitaalisuuteen Deleuzen tuotannossa.

Luvun seitsemän lopuksi tutkitaan teknisen luovuuden mahdollisuuksia nykykulttuurissa. Deleuzen ja Guattarin teknisen, koneellisen luovuuden malli on analoginen syntetisaattori, joka ei perustu tietokoneen tavoin homogeenisen informaation välittämiseen vaan heterogeenisten osasten välittömään ja uutta luovaan yhteistoimintaan. Esitänkin, että tekninen luovuus on aineellisen varioinnin valpasta seuraamista ja heterogeenisten ainesten yhdistämistä. Tällainen tekninen luovuus edellyttää kokeellista osallistumista tietyn kokonaisuuden tai systeemin prosessien sisäiseen, intensiiviseen dynamiikkaan, joka näyttäytyy materiaalien affekteina ja singulaarisuuksina.

Päätösluvussa ”Conclusion” kiteytän tutkielman perusväitteen, että Deleuzen intensiivisyyden teoria jäsentää materiaalisuuden välitöntä luonnetta ja tämän vuoksi se on keskeinen osa Deleuzen metafyysistä järjestelmää. Lisäksi tämä teoria auttaa

ymmärtämään tekniikkaa materiaalisena tietona ja myös siinä piilevää luovuutta. Intensiivisyys luonnehtii ilmiöiden asteittaista vaihtelua ja variointia. Tekniikka taas on olennaisesti vuorovaikutusta materiaalisen varioinnin kanssa, ja näin ollen väitän, että tekniikka lähestyy ilmiöitä ensisijaisesti niiden intensiivisyyden kautta. Lisäksi materiaalisten prosessien intensiiviset puolet ilmentävät juuri näiden prosessien heterogeenistä muuttuvuutta, niiden affekteja ja singulaarisuuksia. Toisin sanoen materiaalisia prosesseja ja variointia ei ainoastaan tunneta ja kohdata intensiivisestä näkökulmasta vaan myös niiden muutospotentiaali näyttäytyy meille olennaisesti juuri tästä näkökulmasta. Koneellinen ja tekninen muutospotentiaali piilee siinä, miten tietty ilmiö tai systeemi reagoi ulkoisiin vaikutuksiin ja mitkä ovat sen taitekohdat ja haamurajat, jotka ylitettäessä ilmiön luonne muuttuu. Tutkimuksen johtopäätöksenä esitän, että tekninen luovuus merkitsee olemassaolevien asetelmien muokkaamista seuraamalla ja mukailemalla materiaalista variointia ja muodostamalla uusia yhteyksiä eri prosessien välille. Tällainen luova, tekninen muutos tapahtuu olennaisesti osallistumalla heterogeenisiin, intensiivisiin järjestelmiin.

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