JYVÄSKYLÄ STUDIES IN HUMANITIES
307

Sanna-Mari Äyrämö

In Order to Enable Meaningful Playing

How to Support Player's Learning through Digital Game Narrative Design

JYVÄSKYLÄN YLIOPISTO

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Esitetään Jyväskylän yliopiston humanistis-yhteiskuntatieteellisen tiedekunnan suostumuksella
julkisesti tarkastettavaksi yliopiston Agora-rakennuksen auditoriossa 2
maaliskuun 25. päivänä 2017 kello 12.

Academic dissertation to be publicly discussed, by permission of
the Faculty of Humanities and Social Sciences of the University of Jyväskylä,
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UNIVERSITY OF JYVÄSKYLÄ

JYVÄSKYLÄ 2017

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Jyväskylä Studies in Humanities
Editorial Board

Permanent link to this publication: http://urn.fi/URN:ISBN:978-951-39-6998-1

URN:ISBN:978-951-39-6998-1
ISBN 978-951-39-6998-1 (PDF)
ISSN 1459-4331

ISBN 978-951-39-6997-4 (nid.)
ISSN 1459-4323

Jyväskylä University Printing House, Jyväskylä 2017

ABSTRACT

Äyrämö, Sanna-Mari
In Order to Enable Meaningful Playing: How to Support Player's Learning through Digital Game Narrative Design
Jyväskylä: University of Jyväskylä, 2017, 115 p.
(Jyvaskyla Studies in Humanities
ISSN 1459-4323; 307 (nid.) ISSN 1459-4331; 307 (PDF))
ISBN 978-951-39-6997-4 (nid.)
ISBN 978-951-39-6998-1 (PDF)

The main research problem of this constructive study is, how player's learning during game playing can be supported through game narrative design. When the solutions are searched within narrative theories, modern game theories, and learning game design research, the problem turns conceptually challenging. Basically, the challenge stems from the ambiguous concept of narrative and the diversity of narrative theories. The academic conversation on learning game design has drawn approaches from various narrative theories and traditions of screenwriting and creative writing. Hence, the conversation results fragmental.

Firstly, I consider what kind of narrative definition and conception should be adopted, so that it best lends itself on applying narrative learning approaches, as well as, recognizing the novel types of narrative encountered within digital game (design) context. Secondly, I consider how the player's role in game narratives can be characterized and conceptualized. Finally, the third objective of the study is to investigate, what guidelines for digital learning game narrative design can be suggested, applying the constructed concepts and models.

The results contain two models of narrative, the constitutive one, and the game design -oriented. Within the first-mentioned narrative model, four design areas of narrative are specified and characterized. In the last-mentioned model, the four design areas are set to intersect digital game rules. Besides, the concept of co-storyliner is proposed in order to discuss the position of the player in a game narrative intended by the designer. When a designer determines links between the narrative design areas and the game rules, he formulates the grounds and the position from which a player as a co-storyliner will conduct meaning negotiations and pondering during game playing. Meaning negotiations and ponderings are something the player must do in order to pursue and express agency within the game. Hence, when considering player's learning during narrative game playing, I recognize the player's meaning negotiations and ponderings particularly essential.

The study demonstrates, in general, the multidimensional design potential of game narratives, and especially, the challenging nature of digital narrative design from the learning game point of view. Several different ways of constructing learning support can be applied on the four design areas of narrative. Above all, the learning game narrative designer should piece together the narrative and game rule -related design decisions as a whole, and concern himself with how the constructed conditions of meaning negotiations can develop the player regarding the explicitly set learning objective.

Keywords: digital game, digital narrative, learning game design, narrative theory

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FOREWORD

My interest in narrative theories was sparked by the literature and the writing studies at the department of music, art and culture studies, University of Jyväskylä. The opportunity to focus on the special case of digital game design was possible thanks to the multidisciplinary collaboration between the department of music, art and culture studies and the faculty of information technology. This collaboration has become concrete in an unique way through the supervision I have been lucky to get for my studies.

Hence, my first thanks belong to Raine Koskimaa, my principal supervisor. I am grateful to you for familiarizing me with the researcher's routines and offering invaluable guidance including both reasonable critique, as well as, valuable patience. Secondly, my warm thanks go to Tommi Kärkkäinen, my co-supervisor, who initially proposed me the research problem concerning learning game narrative design. Thank you for presenting so open-minded and inspiring ideas and, besides, for introducing the constructive research approach.

Furthermore, I want to express my sincere appreciation and gratitude to the pre-examiners of my dissertation, Petri Lankoski and Marie-Laure Ryan, who offered valuable comments for improving the thesis. Furthermore, I am especially thankful to Petri Lankoski for agreeing to spend his time as the opponent of the thesis.

This study would not have been the same without certain type of freedom. I would like to express my appreciation for the following financial sources, which have made it possible for me to devote myself to the research: the Ellen and Artturi Nyyssönen Foundation, the Emil Aaltonen Foundation, the Oskar Öflund Foundation, as well as, the faculty of humanities, and the faculty of information technology, University of Jyväskylä.

I wish to thank people involved in game studies and with whom I have had pleasure to discuss about several questions related to my topic, and sometimes beside the point, too. It has broadened my own perspective on digital culture, media, and the practices of creative design to get to know various (previous and more recent) colleagues, for which playing and digital games are the subject of tireless curiosity: Marja Kankaanranta, Tuula Nousiainen, Jukka Varsaluoma, Tero Pasanen, Jonne Arjoranta, Tanja Välisalo, Marko Siitonen, Tero Kerttula, and Markku Eskelinen. Thank you! Additionally, I want to thank the friendly staff of the faculty of information technology, whose members have always found answers to my more or less weird questions.

Next, I must express my collective gratitude to the friends, the relatives, as well as, the relatives by marriage – to all those wonderful people, who have shown interest towards my work, and at times, in one or another form, pleasantly persuaded me "to come out to play".

Lastly, there are three special persons in my life, who I never can thank sufficiently for all that support and love they have offered to me. Dear kids, Milo and Alisa, I feel privileged to experience every day with you, to be asked to share thoughts, games, secrets, even worries – or just sudden fun and frolic.

Sami, I am so fortunate to have you by my side. You encouraged me to take up this challenge, and along the way, many times you helped me to find my own way to run with the project. This is just one instance on how your caring presence enriches our life. Now, ten beautiful years later, I finally have a chance to respond also to the words of your acknowledgements: I love you too!

Jyväskylä 27.2.2017
Sanna-Mari Äyrämö

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I. Äyrämö, S.-M. & Koskimaa, R. 2010. Narrative Definitions for Game Design: A Concept-Oriented Study of Nine Computer Game Design Guidebooks. R. Van Eck (ed.) *Interdisciplinary Models and Tools for Serious Games: Emerging Concepts and Future Directions*. USA: University of North Dakota, 1-29.

II. Äyrämö, S.-M. *in press*. Narrative Constitution for Instructional Game Design: The Semiotic-Cognitive Model of Narrative. *Journal of Storyworlds: A Journal of Narrative Studies*. vol 8 (2), xx-xx.

III. Äyrämö, S.-M. 2015. Learning between Rules and Narrative: Player's Meaning Negotiations Analyzed, Designed, and Assessed. Munkvold, R. & Kolås, L. (eds.) *Proceedings of the 9th European Conference on Games Based Learning. ECGBL 2015*. Reading, UK: ACPI, 631-637.

IV. Äyrämö, S.-M. *submitted to Human Technology Journal in November 2016*. How to Analyze Game Narrative for Assessing Learning Game Design against the Learning Objective.

CONTENTS

1 INTRODUCTION

1.1 Motivation: Why to Study Learning Game Narrative Design?

> "Different approaches to learning and different forms of instruction – from imitation, to instruction, to discovery, to collaboration – reflect differing beliefs and assumptions about the learner – from actor, to knower, to private experiencer, to collaborative thinker" (Bruner 1996, p. 50).

At root, two general considerations have inflected the formation of this study. Firstly, *digital games*, while being recognized as objects of technocultural form in their own right, *offer a reflective and fertile vantage point for conceptualizing the fundamental composition of narrative*. The relationship between a digital game and a narrative, if there is any, can take various forms: lax, detailed, or something between. Regarding this, there appears to be variation of conventions, which is generally recognized as digital game genres, some of which are more narrative-related (for example, adventure games, role-playing games), others being less (action games, platform games), or not at all (abstract games).[1] This variation can be seen to indicate that, in a cultural object, game(s) and narrative(s) can appear as consistently or contradictively cognate parts of a work.

During the early stage of the development of game studies, it was pointed out by Markku Eskelinen (2001) that the dominant user function during playing sessions often differs from that of story consumption with traditional forms of media. The knowledge and conceptions acquired by the the player-recipient are instantly applied and tested in the situation at hand (i.e. in playing endeavors) (Eskelinen 2001). Additionally, digital games as a media form seem to gain a capacity to challenge, and even add levels on the traditional composition of narrative communication, as assumed by Espen Aarseth (1997).

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[1] The recognized game genres are, of course, invariably an object of change. Besides, an entirety identified as a digital game may, in practice, include various sub-areas representing different game types, so that, for example, an adventure game frame can contain abstract games as subareas.

Secondly, Scot Osterweil and Lan Xuan Le (2010) presuppose that "[i]f games succeed as cognitive tools, an externalizing of certain human mental processes that allows us to cultivate skills to robust mastery, then *games might transform the way we think about education*" (p. 65, *my emphasis*). Evidently, this have been intuited by researchers of instructional design and learning, such as Thomas Malone (1980, 1982, 1981) and James Paul Gee (2007), who have approached digital games with a view to find out new ways of approaching learning, teaching, motivation support, and offering instruction. Thus, during the initial phase of this study, it was anticipated that as a subject of research, narrative learning game design, may offer novel perspectives regarding *both* narrative *and* the design of instruction.

This, of course, resulted as multiple elementary questions: What kind are the characteristics of narrative as a learning support? How are digital game narratives designed? What are the requirements of a game design process? What are the most essential characteristics of digital games, in general, and as learning tools? What could be the role of narrative in digital game player's learning? The answers for such questions had to be constructed by searching the work of multiple disciplines such as psychology, pedagogy, instructional design, and, game studies.

One of the premises I adopted for the study at hand, includes the idea that one always learns *something* when playing games (Gee 2007). Relative to teachers, the key question is what that *something* is. Thus, in this study, it is not necessary to strictly separate learning games from entertaining games otherwise than regarding that, in the case of learning games, there exists an explicitly stated learning objective orientating the game design.

The approach represented in this study can be characterized as being interdisciplinary towards narrative and medium-specific towards digital games. I firstly give reasons for the first-mentioned. A narrative scholar Shlomith Rimmon-Kenan (2006) says: "[i]nterdisciplinarity has been the name of the game for quite some time. One of the rich, but also problematic, tools for bridging gaps between disciplines is the concept of 'narrative'" (p. 1). Narrative certainly has featured the academic discussion on multiple fields since the rise of interest on humanistic and social sciences during the 80's. However, the narrative related discussion does not comprise a coherent unity, but separate branches, where the term 'narrative' may get differing meanings. David Herman (2004) notes that an attempt to negotiate a synthesis between various extreme-type views on narratives necessitates "integrative, cross-disciplinary approach to narrative analysis" (p. 56). This state of affairs has largely motivated the research design of this study, especially regarding its concept-oriented part.

As a young discipline, game studies, or ludology, has struggled with the concept of narrative, evidently because the combination of digitalization and interactivity enables digital games to gain differing relations to narratives, when compared to preceding, traditional storytelling forms of media. Aarseth (2012) demands: "What has so far been lacking is a detailed, robust understanding of the various ways computer software have been used to combine elements

from narratives and games into a number of quite different ludo-narratological constructs" (p. 130). Furthermore, for example, Daniel Punday (2012) notes that the terms for considering "the place of the reader in electronic – or computer-mediated – narratives" (p. 25) has gained inadequate attention, so far. The same can be said concerning digital game narratives, even though, during the early stages of game studies, which is to say, at the turn of the 20th century into the 21st, there occurred debate-like writings concerning, among other issues, the differences between playing of digital games and traditional modes of narrative reception.

The discussion on narrative in the context of interactive learning environments started from the mid-1990s (Hazel 2008). Matti Hyvärinen (2010) describes how relative to the general development of narrative studies (and especially on the field of social sciences) the mid-1990s was a moment of "real deluge" (p. 74) of publications on narrative. The so-called Narrative Turn touched the research areas such as, for example, education, cultural studies, and philosophy (Hyvärinen 2010). Then, from the outset, where there have been "attempts to define 'narrative learning environments' these seem very much bound up in the particular specialisms of practitioners" (Hazel 2008, p. 199). Additionally, this is true in other educational contexts, too, for example, in the discussion considering "narrative curricula practices" (ibid.).

The entirely different pedagogical ideas discussed under the term 'narrative learning' offer another example of fragmental development of narrative-related educational discussion (compare, for example, Clark & Rossiter 2008; Hakkarainen 2008). When I explored the research literature about learning game narrative design, and then more generally about digital games and narrative, for the first time, the most evident characteristic of the discussions was uncoherence, and inconsistency in the use of narrative-concepts. Hazel (2008) recognizes the same phenomenon in the context of interactive learning environments, and assumes that the fragmental characteristic of the discussion stems from narrative itself. Narrative possesses complex nature, is "intrinsically cross-disciplinary research area" (Hazel 2008, p. 200), and thereby "generates multiple sets of domain-specific technical languages"(ibid.), which are difficult to reconcile with each other.

It can be said that, in this study, the medium-specific approach towards digital games *results in that* narrative must be approached interdisciplinarily. This is because, what essentially seem to be missing from the early learning game and game narrative -related discussions is the profound comprehension of the specific characteristics and the strengths of digital games, as well as, the understanding on what may be the dividers of digital games amongst the preceding media forms.

During the 80's and 90's, the researchers considering the design of hypermedia applications for education faced the fundamental questions of *how*: How effective learning opportunities should be designed (Pivec, Dziabenko & Schinnerl 2003)? Alice Mitchell and Carol Savill-Smith (2004) present a demand for seeking deeper understanding of game cultures in order to find out efficient

and genuine ways for designing "real learning games that appeal to young people and that could have a strong and positive impact on their education" (p. 58). Yasmin B. Kafai (2006) notes that in the field of learning game design (in which she reserves the term 'instructional game design'), there is an extensive need for further research, including the questions of "what works when, for what, and for whom" (pp. 37–38). However, so that these questions could be answered, Kafai (2006) suggests, a more comprehensive research agenda of *game studies* needs to be constructed at first. This would serve, then, as a basis for the needs of instructional design research. Yet, more recently, it has been noted that there is a special need for research, which focuses on the particulars of learning and serious game design (Clark, Tanner-Smith & Killingsworth 2014).

The lack of the design-related (how-oriented) research – and probably also the heterogeneity of the field of narrative studies – has led to the application of game design guidebooks, i.e. designers' more or less practice-based perceptions, on the research concerning learning game narrative design. This, in turn, has resulted as a fragmental academic discussion, in which the term narrative gains multiple, often controversial definitions. The section 3.3 of this introduction article deals with the separate threads of the academic discussion on learning game narrative design more closely.

In this study, the above-presented requirements have been taken into consideration by applying a medium-specific approach on the how-oriented subject of the study. In practice, this meant that, in the beginning of the study, the characteristics of *game narratives* (if such particular type of narratives can be seen to exist) were left unsettled until defined alongside the study. In other words, the characteristics of game narrative were set as an object of study – and the needs for this concept ('game narrative') were searched for by studying game designers' representations of their know-how. Additionally, the essential characteristic of digital games, namely that of having a programmable rule system, was emphasized when the design model was built.

Michele D. Dickey (2006) considers how computer game narratives support player's problem solving, and sets her focus especially on the adventure game genre. As a result of her analysis, she proposes a design heuristics for creating narratives for learning purposes in game-based environments, or other interactive environments. Dickey (2005, 2006) demands that game narrative design should be further investigated regarding its potential for fostering different types of learning, especially constructivist learning, and player's engagement in interactive learning environment.

1.2 Objectives: the Research Questions and the Scope of the Study

The main research problem is, how player's learning during game playing can be supported through game narrative design. In the study, the focus is on the

concept of narrative and on the content design of narrative learning games. Thus, the problem contains both theoretical and practical sides. Questions considering software design –related subjects are excluded from the scope of the study.

The objective of constructing instrumental knowledge was recognized to represent *a constructivist research problem*. Within the constructivist research paradigm, the results of the study can manifest as concepts, models, methods, and realizations. The concepts construct the vocabulary of the theme for research. The model contains a group of propositions or clauses, which express the relationships between the concepts. The method is constituted by a set of steps, by way of which the task in demand can be carried out. (Järvinen & Järvinen 2000.)

The main objective of this study is to construct conceptual tools – concepts, models and methods – which guide, inform, and support the practices of learning game design related to the decisions of the narrative design. At the same time, in order to propose theory-based guidelines (i.e., methods) for practical area of learning game design, the conceptual tools (i.e,. models) must be constructed by applying appropriately selected concepts. As is stated above, in constructivist research, the concepts can be constructed as the results of the study. In this study, the aim was to find out, if in the multidisciplinary field of narrative studies, particular concepts could be selected to be applied in the presented need. Thus, new concepts were constructed only when needed, and when there did not already exist an appropriate one. Regarding the study, the emphasis was especially on the model derivation.

The first part of the study can be characterized as concept-oriented, whereas, the second part focuses on more practical concerns of narrative game design, especially, on how the designer can ensure that the player's meaning negotiations during game playing match with the explicitly set learning objectives. The main research question - how player's learning can be supported by narrative design in learning game design – was further determined and made more accessible by way of the following three sub-questions:

The first part of the study:

> RQ1: What kind of narrative definition and conception should be adopted, so that it best lends itself on applying narrative learning approaches and recognizing the novel types of narrative encountered within digital game context?
>
> RQ2: How the player's role in game narrative can be characterized?

The second part of the study:

> RQ3: What guidelines for digital learning game narrative design can be suggested so that player's learning during game playing is supported as comprehensively as possible?

I apply Juul's (2005) game definition, or the classical game model, according to which "[a] game is a rule-based system with a variable and quantifiable out-

come, where different outcomes are assigned different values, the player exerts effort in order to influence the outcome, the player feels emotionally attached to the outcome, and the consequences of the activity are negotiable" (p. 36). Juul's definition has been criticized by, for example, Tavinor (2009), according to who the definition cannot be sufficient, owing to that it was initially developed to define and describe non-digital games (or non-videogames, which is Tavinor's word choice), and thus, it does not point out to the unique characteristics of digital games. Besides, Tavinor (ibid.) demands, in order to meet the case, all digital games would have to fit under the proposed definition. The first part of the critique depicts a call for further studies on the general development of various modes of games and playing during the digital era. However, the fact that the classical game model does not consider the distinctive characteristics of the digital game medium does not mean that the definition is not sufficient for games, which according to the view pursued by Juul (2003), are transmedial. The latter part of Tavinor's critique seems to bring up a point related to the usage of colloquial language, which should not challenge scholarly specifications.

Thus, when selecting games for testing the proposed models suggested in this study, a digital work was considered as 'a game' only if it included some kind of target formed by game rules. Thus, some products, which are called "games" in colloquial language, were excluded from this study as digital toys. Besides, a game genre -related restriction (in which case the focus would have been solely on the adventure games and role playing games) was perceived as useful at first, but this perception changed along with the proceeding study. Hence, the models, which are the most central results of the study, are pursued to be presented as game genre -free. Furthermore, this study is restricted to consider the design of single-player games, or, when sensible, single-player mode of multiuser games. This restriction was made due to practical reasons: the aim of considering both single- and multiuser games (with other restrictions presented in this chapter) would lead to enormous amount of variables, and would, thus, be out of reach of a single PhD dissertation study.

In this study, instructional design of learning situation and materials are approached through constructivist light, as learner's active aspiration to construct knowledge from his/her experience, as considered in terms of technology contexts by David H. Jonassen, Kyle L. Peck, and Brent G. Wilson (1999). Teaching and instructional design are, above all, recognized as intentional activities, which means that the materials are not 'neutral' in the sense that they could reveal their subject 'as it is'. Even if the game designer's actual intentions are not available through the game itself, the educational intentions are normally announced in the form of more or less explicitly defined learning objectives. This notation is usually attached in the opening of the game, in the manuals of the game, or on the home page of the game. Lorin W. Anderson, David R. Krathwohl, and Benjamin Samuel Bloom (2001), propose a revised Taxonomy table, by which learning objectives can be specified according to the type of knowledge and the type of cognitive process those objectives demand. As noted during the latter part of the study, effective and well-informed design decisions

practically require sufficiently exact definition of the object. The Taxonomy Table, which further specifies various learning objectives, was applied during the game analysis -part of the study. In practice, the explicitly told learning objectives of the selected games were further determined and compared with each other. Furthermore, the application of the Taxonomy Table made it possible to consider, how closely and in what extend the player's meaning negotiations during game playing matched the explicitly told learning objectives.

2 NARRATIVE STUDIES – A BRIEF OVERVIEW

My account on narrative studies does not follow a chronological order of the development of narrative studies, nor does it comprehensively lump together the results gathered by individual researchers. It is clear that the theories of drama from the Classical Period, Aristotle's (1967) *Poetic's* par excellence, have had ineradicable influences on the modern narrative studies. However, in the account on narrative studies presented under this chapter, the focus will be on the more recent developments of the study, where the term 'narrative' for the first time occurs as an object of research.

2.1 The Concept of Narrative Moves over the Disciplines: the Narrative Turn

The formation of the discipline of narrative studies can be determined in the mid-1960s. The since evolved academic discussion on what actually is narrative, and how it could and should be investigated, in order to be recognized as a scientifically valid research, occurs as enormously multifaceted and multilayered debate, whose extensive description is inevitable out of the question due to the limits of this chapter. Thus, we have to content ourselves with the purposely selected glimpses on narrative studies and theories. I will consider the function-type units of narrative (as recognized within narratology), the multilayered semiotic structure of narrative and the attempts to determine the constitution of narrative, the communicative agents in the hierarchical structure of narrative, narrative as seen from the point of view of cognitive studies and, narrative studies in digital media forms.

Before moving on, it is necessary to sketch on a highly general level the constituent phenomena of narrative studies. First, I aim to exemplify the kind of extremes of the contexts in which the narrative studies have taken place. In "An Introduction to the Structural Analysis of Narrative", which is one of the most influential opening articles of narratology, Roland Barthes (1975) recognizes

narrative mode as a phenomenon, which is present everywhere and at all times in human culture – the vehicles, forms, and genres just vary: "Like life itself, it is there, international, transhistorical, transcultural" (p. 237). At that time, the cardinal challenges were, how to scientifically capture and describe narrative, and what actually are elements of narrative. After some forty years later, in *Routledge Encyclopedia of Narrative Theory* (edited by Ryan, Herman & Jahn 2005), a phenomenon referred as the Narrative Turn (or, narrativist turn) is described as follows: "the study of story has been effectively dislodged from its original academic home in humanities – in religion, *philosophy, *historiography, and literary and *cultural studies – and in the text-based varieties of its near relatives – jurisprudence, linguistics, *psychoanalysis, anthropology [- -]. In the last decade narrative has become a significant focus of inquiry in virtually all disciplinary formations, ranging from the fine arts, the social and natural *sciences, to *media and *communication studies, to popular therapy, *medicine, and managerial studies" (Kreiswirth 2005, p. 378). Evidently, there must be loads of conceptual tools currently, for specifying the structures of narrative, the parties of narrative communication, and the mechanisms by which meanings are constructed in and interpreted from narratives.

The development of modern narrative studies is generally seen to take place as two distinct processes (Hyvärinen 2010). Firstly, there is the body of research stemming from the structuralist narratology – an attempt to model a science of narrative according to the model of structuralist linguistics. Secondly, within another branch of narrative studies, *narrative knowledge* and *the narrative way of knowing* have been recognized as valuable objects of study.

As Ferdinand de Saussure's semiotics was adopted as a pilot-science, to the structuralist narratology it entailed the two-part model of a linguistic sign – the division between signified (French '*signifié*') and signifier (French '*signifiant*') – and the approach on language as a sign structure, which is established on differences. The abstract signifying system (French *'langue'*) manifests in the concrete instances (French *'parole'*), where the rules and conventions of the system are employed. In accordance with the aim of structuralist linguistic to investigate the abstract rule system of language through its concrete usages (speech acts), the aim of narratology is to investigate the "grammar" of narratives through its single instances. In other words, the structuralist narratology aimed to reveal the general laws by which narratively organized works are capable to express the story contents.

Originally, the narratologists' aim was to establish a discipline, which approaches stories transmedially, transculturally, and transgenerically (Barthes 1975). The leading assumption was that there must be an underlying, but modelable, supra- and transtextual code, by which people are able to identify and interpret something as a narrative (Herman & Vervaeck 2005).

Regarding the narratological aim, in addition to the vantage-point and the concepts and principles adopted from structural linguistics, several terms and conceptions regarding stories were adopted from Russian formalism. Especially, Vladimir Propp's (2003) *Morphology of the Folktale*, a pioneering study on Rus-

sian folktales, widely inflected on the formation of narratological approach. Above all, Propp's work offered the epiphany that a story may gain a deep structure independent from a text, i.e. the structure of *functions*.

Thus, narratologists were interested in individual stories merely as a corpus. Questions regarding interpretations, meanings, or the quality of a particular text or story were entirely excluded from the narratologists' interest. The narratological aim was not interpretative, but descriptive. (Tammi 1992; Herman & Vervaeck 2005.)

Gérard Genette (1983) recognizes two scopes of classical narratology, a thematic one and a formal (or modal) one. While some narratologists adopted the more thematically oriented approach on the structures composing a story (for example, Bremond 1964; Bremond 1980), others applied a grammatical paradigm (for example, Genette 1965, 1969, 1972, 1983), which set the focus on the modal questions of representing stories.[2] Genette's (especially 1972, 1983) work is often referred as one of the most comprehensive in the last-mentioned respect. He used tense, mood, and voice in order to characterize the relations between the story world, narrative in respect of which it is presented, and the narration, through which that presentation takes place (Shen 2005).

Despite the original demand of generalizing the narrative "grammar" on all its domains, the studies of classical narratology mainly focused on text-based narratives (for example, Genette 1965, 1969, 1972). Additionally, film narration was involved in, at least since Christian Metz's (1974) *Language and Cinema* and Chatman's (1980) *Story and Discourse*. In addition to the structural linguistic as an ideal, the pursuit of systematicity and logic coherence of the constructed theory proved to be problematic and restricting regarding the study of stories and the diversity of narratives (Herman 2004). As Herman (2004) characterizes "[t]he result was an approach that championed the study of narratives of all sorts [- -], but lacked the conceptual and methodological resources to substantiate its own claims to generalizability" (p. 47). Furthermore, classical narratology has been criticized regarding anthropomorphism, gender-blindness, and disregard for context (Herman & Vervaeck 2005).

Nevertheless, after its heyday, classical structuralist narratology has influenced and offered plenty of foundational concepts for the more recent developments of narrative studies. The so called postclassical narratology has attempted to avoid the limitations of classical narratology, but at the same time, the scope of interest has widened to "consider the circumstances that make every act of reading different" (Herman & Vervaeck 2005, p. 450). As a result, the field of postclassical narratologies is substantially less unified, if compared to classical narratology. Ansgar Nünning (2003), for example, suggests a separation of the following approaches of new narratologies: 1) contextual, thematic and ideological approaches (including, among others, the feminist approach), 2)

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2 Genette (1983, p. 16) himself bounds his narrative definition with verbal transmission, and applies a classical view, which leads back to, at least, Aristotle's *Poetics*. Thus, in Genette's approach, narrative representation of stories (*diegesis*) contrasts with other "nonnarrative modes", such like dramatic representation (*mimesis*).

transgeneric and transmedial applications and elaborations of narratology, 3) pragmatic and rhetorical kinds of narratology, 4) cognitive and reception-theory-oriented (meta) narratologies, 5) postmodern and postructuralist deconstructions of (classical) narratology, 6) linquistic approaches or contributions to narratology, and philosophical narrative theories, or, possible worlds theories.

However, in the context of narratological theories, the discontinuous use of concepts, such as 'story', 'fabula', 'sjuzet', 'plot', and 'discourse', has caused challenges for the interdisciplinary discussion. The diffuse history of the origins, usage, and inconsistencies of translations of the above-mentioned concepts has been considered, for example, by Rimmon-Kenan (2006), John Pier (2003), and Wolf Schmid (2003). For shortly summing up, usually, story, or, in Russian, *fabula*, refer to the recounted events in chronological order. Plot, or, in Russian, *sjuzet*, points to the events in the order they are recounted, albeit, plot has been defined also as separate from the area denoted by sjuzhet (Dannenberg 2005). The term *discourse* encompasses the techniques, by which the plot is presented, or, "the modus of presentation" (Chatman 1980, p. 43). When contemplated closer, the attempts to discuss the meanings and the meaning producing mechanisms of narrative through the two-fold *what*-and-*how* -approach often tend to run into problems. For example, the questions related to the techniques of narration (for example, the selected point of view) and representing a narrator can be separated from other questions concerning the path, or the "shaping principle or dynamic" (Abbott 2008, p. 18), which takes form in the presented logical and causal continuum that connects the events of a story. This continuum is often considered as a plot. Furthermore, if a narrator can attend and take part into the events of a story as a character, and, at the same time, by implication, give reasons for the techniques employed on narration, the division between what and how seem to collapse.

In addition to the theory lines focusing on narrative as a structure, narratives have been studied regarding narrative knowledge and the narrative way of knowing. This touches numerous humanistic, social-scientific, and other disciplines, such as social psychology, ethnography, medicine, jurisprudence, and historiography (*Routledge Encyclopedia of Narrative Theory* 2005, p. ix; (Hyvärinen 2010). In *From Knowledge to Narrative. Educators and the Changing Museum* Lisa Roberts (1997) points that, due to an epistemological transition from knowledge to narrative and a paradigm shift in museum exhibitions, in late-20th-century, museums have moved from the application of traditional methods of knowledge transmission to the application of constructivist interpretive methods. The paradigm shift from knowledge to narratives has implied the discovery of new quality of knowledge, the narratively constructed meanings. As a consequence, the interest on narratives extended from cultural products to communication theory, pedagogy, sociology, therapy, politics, artificial intelligence, and more recently, on the areas such as medical diagnosis, education, and public policy analysis, for instance (Kreiswirth 2000). As a consequence, the narrative analysis has been applied as a methodological tool to uncover the meaning structures from, for example, interview-, inquiry, and biographical

data. The research applying narrative method is often referred as 'narrative research', in order to illuminate the difference from the research *on* narrative.

Especially the second thread of narrative studies has been referred with the term *Narrative Turn* (Kreiswirth 1995), whereas narratological research have been often less associated to this occurrence. Actually, Hyvärinen (2010) has speculated, how, in the midst of the academic state of change, the phrase 'Narrative Turn' was applied as an identity concept, which offered researchers the means to extend and express the feeling of belonging and contributing "to the leading edge of scholarly and intellectual change" (Hyvärinen 2010 p. 69). Furthermore, Hyvärinen has proposed that when trying to define Narrative Turn as a historical concept, instead of one turn, there could be seen four separate narrative turns (Hyvärinen 2010). The four proposed turns have occurred on the disciplines of literary theory (in the 1960s), historiography (after the turn of literary narratology), and social sciences (from the 1980s onwards), whereas the fourth turn has took place as a broader societal and cultural orientation towards narration (ibid.).

In addition to the development of linguistics and formalism, another significant motive force behind the development of the modern narrative studies seem to be the growth of cognitive psychology since the 1960s. Especially Jerome Bruner's ideas and work on narrative mode of thinking have influenced widely on various fields of humanities and social science in the 1980s and onwards.

The interdisciplinary development of narrative studies involves multiple challenges. Within the narratology-oriented research line, especially due to the diverging forms and modes of new digital media forms, it have been recognized that the concept of narrative requires transformation towards more comprehensive, better applicable definition (Rimmon-Kenan 2006; Ryan 2005a, 2005b). However, due to the exponential interest and divergent applications of the concept on diverse disciplines, some theorists have noted that 'narrative' is at risk of losing its meaning. This is especially true, when 'narrative' is expanded to contain meanings such as 'assumption' or 'hypothesis', as is the case in the contexts of psychoanalysis (Rimmon-Kenan 2006; Ryan 2005a, 2005b). The psychoanalysis-based meanings of narrative can be generalized to refer to mental tools for reflecting human self and experience of reality (Polkinghorne 1988; Rimmon-Kenan 2006), where 'narrative' is applied as "'a mode of knowledge' or a 'cognitive scheme' by which we perceive and interpret the world" (Rimmon-Kenan 2006, p. 14), but in a looser and more undefined shape than in the context of cognitive approach on narrative, discussed in the sub-section 2.5.

2.2 Functions – the Units of Narrative Structure

Barthes (Barthes 1975) states that it is impossible to produce a narrative without referring to its implicit system of units and rules. In order to catch a description of the core structure of narrative, Barthes (ibid.) applies the division on *langue*

and *parole*, which originates from Saussure's (1983) linguistics. The term langue refers to the rules and conventions of a signifying system on base of which single, concrete instances of the use of the signifying system, the parole, are produced. Barthes (1975) notes that the langue of narrative is not the same as of articulated language. Furthermore, the units of narrative deep-structure "are independent of linguistic units with regard to substance" (Barthes 1975, p. 246).[3] According to Herman's (2005) reading "in parallel with the structuralist distinction between *parole* and *langue*, the 'telling' of a myth [or a story] can be opposed to its 'understanding', which depends on reconstituting the structural code that lies beneath the myth's [or story's] surface manifestation in spoken or written words, *images, etc."(p. 573).

The study of story structure stems from Propp's (2003) work, in which he discovered the existence of the foundational plot elements, *functions*, shared by the folktales analyzed. Hence, the story functions constitute a deep structure, which is independent from the communication medium. Propp (ibid.) defines the concept of function as "an act of a character, defined from the point of view of its significance for the course of the action" (p. 21). From his corpus, Propp determines the totality of 31 different functions, which can occur including absence of some functions, but the order of occurrence always being the same (ibid.).

Barthes's (1975) approaches functions as one of the three levels that structural narrative analysis should take into account, others being *actions of characters as actants*, and, *the level of narration or discourse*. According to Barthes (ibid.), these levels of narrative exist in hierarchical relation to each other. Barthes recognizes functions of two kinds: the more decisive ones for the course of events—called *cardinal functions*, also called *nuclei*, and the other ones, which play rather complementary role, called catalyses. Chatman (1980) has applied similar division of functions, but, instead of cardinal and catalyses, he calls the types kernels and satellites, respectively.

Claude Bremond (1980) considers Proppian functions as the basic units of narrative, or, as "narrative atoms" (p. 387). According to Barthes (1975), Bremond strives to "reconstruct the syntax of human behavior as exemplified in narrative, to trace the succession of 'choices' which this or that character inevitably has to face [- -] at various points in the story" (p. 252).

Bremond (1980) suggests a logical model of the network of narrative possibilities, which represents the narrator's options regarding the story events. The model contains *elementary sequences*, which correspond on three logically obligatory stages of any processes: the opening, which implies or sets a goal, or a foreseen action or event; the actualization, where the event or act is achieved; and the closing sequence, which is about the attainment of the results implied in the opening sequence. The second and the third stages include both positive and negative possibilities of realization.

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[3] In Saussurean sense, substance stands against form, which, in turn, means abstract relations. Hence, the term 'substance' seems to refer in this context the elements required, but not comprising relations (i.e. form).

The most notable deviation Bremond (1980) makes from the attributes of Propp's functions is that "none of these functions lead necessarily to the following function in the sequence" (p. 387). Instead, the freedom of selecting about the continuation and realization of actions and events is reserved to the narrator (Bremond 1980).

2.3 Semiotics and the Composition of Narrative

Barthes (1975) gives reasons for applying linguistics as the basic model to facilitate the initial formulation of structural analysis of narrative. At root, he bases the application of linguistics on the easiness of applying terms and principles ready to use. Besides, he notes that narrative gains special relationship with verbal and literary language, as it most often employs it as its privileged "vehicle" (ibid.). In order to consider the semiotic foundations for narrative composition, within this sub-section, I focus on the sign models proposed by Ferdinand de Saussure and Louis Trolle Hjelmslev, whose significance as a linguistic baseline for the formation of narratology as a branch of science have been enormous. Besides, I summarize Charles S. Peirce's three types of signs.

Saussure (1983) approaches language as a social institution, which is a system of signs that express ideas, and which, as one of many such systems, happens to be the most important for human beings. The Saussurean model of a sign comprises two psychological sides, a concept, and a sound pattern, which are named the *signified* and the *signifier*, respectively (Saussure et al. 1966) (see Table 1).[4] The first one is the idea, or content, to which the sign points to, not a real, individual cat, or, a concrete house, but, the more general and socially shared idea of a cat or a house. Saussure (1983) defines signifier as "the hearer's psychological impression of a sound, as given to him by the evidence of his senses" (p. 66). But then, he also notes that when a linguistic sign is actualized, the sound pattern-side can be shaped, as well, only silently in one's mind. However, the "sense evidence" is the only reason, why the signifier should be characterized as being a material element. The terms signified and signifier are capable of "indicating the distinction which separates each from the other and both from the whole of which they are part" (Saussure 1983, p. 67). The characteristic of a sign, which establishes its significance on distinctions, is why Saussure ends up stating that the linguistic language is a question of form, and not of substance (Saussure 1983). Saussure (ibid.) compares the associative link between the inseparable constituents of a sign to the sides of a paper. Despite this, both physical audible speech sounds, as well as, concrete real world manifestations of a concept are defined outside the sign model (Saussure 1983). This is to

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4 In Roy Harris's translation of *Course in General Linguistics* [*Cours de linguistique générale*], (Saussure 1983), 'signified' and 'signifier' are substituted by 'signification' and 'signal', respectively).

say, the disparity of both constituents stems from factors external to the language itself.

TABLE 1 Saussure's model of a linguistic sign.

Signified: socially shared idea
Signifier: psychological impression of a sound

Saussure emphasizes two major characteristics for a sign. The first one is that a linguistic sign is arbitrary (Saussure 1983, pp. 67–69). Saussure encapsulates arbitrarity: "The term implies simply that the signal [/signifier] is *unmotivated*: that is to say arbitrary in relation to its signification [/signified], with which it has no natural connexion in reality" (Saussure 1983, pp. 68–69). Language is a closed system, resting purely on differences, by which its units are recognized from each other. However, the arbitrarity characterizes a sign only when a sign, or its constituents, are considered separately. When a sign already has established its place in a language system, it is not arbitrary regarding its relation to other signs. (Saussure 1983.)

The second major characteristic of linguistic sign is the linear character of the signifier. "The linguistic signal, being auditory in nature, has a temporal aspect, and hence certain temporal characteristics: (a) *it occupies a certain temporal space,* and (b) *this space is measured in just one dimension:* it is a line" (Saussure 1983, pp. 69–70). This is to say, linguistic sign does not manifest without the implementation of its sensory part, regardless of if the implementation is conducted aloud or mutely.

Hjelmslev's semiotic framework differs considerably from the Saussurean two-part model, though there are convergences too. For example, Hjelmslev makes a distinction between two planes, *content* and *expression*, which are parallel to Saussure's dichotomy (Taverniers 2008).

Instead of considering a sign and a distinct object of reality, where the sign refers to, Hjelmslev (1961) considers *a sign function*, whose elements, *functives*, content and expression are. In addition to that, Hjelmslev (ibid.) adds three intersecting concepts –*purport*, *substance*, and *form* – by which both the content plane and the expression plane are divided. I introduce the elements of Hjelmslevian framework (see Table 2) moving on from purport, via substance, to form.

TABLE 2 The elements (columns) and aspects (rows) of Hjelmslev's semiotic framework.

	the content plane	the expression plane
purport		
substance		
form		

The domain of purport covers unformed thought masses as a content-purport, whereas, unformed sequences of sound come under an expression-purport. Hjelmslev (1961) defines the content-purport as "the thought itself" (p. 50). This thought can only be *assumed* between two translations of separate languages, which stand for the same content, because "it can be seen that this 'purport' in itself cannot be labeled: as soon as such a labeling is attempted [--] the purport is being formed in one way or another, and in this way it is viewed from the perspective of a particular language, it is viewed as a *content-substance*" (Taverniers 2008, p. 377, *my emphasis*). In context of purport, Hjelmslev seems to express an assumption on an existence of thoughts-with-referents, which are external or prior to language. Thereby, language seems to get the role of a vehicle, and not a generator of meanings.

Hjelmslev (1961) defines substance as being dependent on the form "to such a degree that it lives exclusively by its favor and can in no sense be said to have independent existence" (p. 50). The content-substance is "the 'meaning' of a sign in particular context" (Taverniers 2008, p. 379), i.e., as viewed within particular language. An expression-substance is how a particular person, here and now, pronounces a sound sequence (Taverniers 2008).

The Hjelmslevian approach on the form aspect of a sign has much in common with the Saussurean view, as the system of sign-functions seems to be established on mutual differences between signs. According to Hjelmslev (1961), a content-form is instituted by the sign function and is arbitrary regarding purport. The content-form is made of the "aspects of content defined in relation to other elements of content within one language, and in relation to an expression plane" (Taverniers 2008, p. 379). In parallel, the expression-form comprises of "sound-expressions defined in relation to other sound-expressions within one language, and in relation to a content plane" (ibid.).

Peirce's typology of signs focuses on perception and interpretation, and has quite recently been characterized as a cognitive-interpretive perspective on signs (Pier 2003). The basic types of a sign comprises of three modalities, namely iconic, indexal, and symbolic (Peirce 2001). The difference between icons, indexes and symbols is on how the meaning is attached to the concrete expression side of a sign, or *representamen* (Peirce, Hartshorne & Weiss 1960). Iconic sign establishes the denotational relationship on imitation and likeness, whereas indexal sign denotes the object through actual, physical connection or causality. Symbolic sign, in turn, rests on arbitrary norm-based denotation.

Both Saussure and Hjelmslev viewed a linguistic sign as a psychological instrument for segmenting amorphous and chaotic mass of thought, which in Hjelmslev's terms is represent by *'content-purport'*. Pier (2003) has pointed out that Hjelmslev's semiotic model and Pierce's approach on signs could be seen to complete each other. Through Peirce's three-fold typology, multimodal artworks, traffic signs, architecture, as well as, natural phenomenon can be considered as signs.

By adopting Saussure's approach on the mental-social-system of signs, and Hjelmslev's analytical distinctions on meanings and signs, Chatman (1980)

proposes a quadripartite chart in purpose of specifying the areas of narrative constitution. The diagram consists of four cells: the substance of expression, the substance of content, the form of expression, and the form of content. According to Chatman (ibid.), the narrative content(/signified)-substance "is the whole universe, or, better, the set of possible objects, events, abstractions, and so on that can be 'imitated' by an author". The narrative expression(/signifier)-substance contains all the media forms, which are capable to communicate stories. The material manifestation of narrative discourse in its entirety is situated under the expression-substance. The narrative content(/signified)-form is composed by "[n]arrative story components: events, existents, and their connections" (ibid.), whereas the narrative expression(/signifier) -form contains "[n]arrative discourse (the structure of narrative transmission) consisting of elements shared by narratives in any medium whatsoever" (ibid.). In Table 3, Chatman's chart, (highlighted by violet) is presented in relation to Hjelmslev's semiotic model.

TABLE 3 The areas of Hjelmslev's semiotic diagram covered by Chatman's chart.

	the content plane	the expression plane
purport		
substance		
form		

It is quite widely accepted conception that narratives bear the translation from one medium to another as unchanged. Narratives can be mediated by spoken or written language, through images, animations, as well as, gestures (Barthes & Heath 1977). Chatmans's model of narrative constitution attempts to prove for the autonomy of narrative, and vice versa, the "transposability of the story is the strongest reason for arguing that narratives are indeed structures independent of any medium" (Chatman 1980, p. 20).

Some narrative scholars have attempted to explain in semiotic terms the generation and employment of connotative signs in narrative contexts. Barthes (1972) approaches narrative as a multilayered structure of signs, in which another sign, with its denotative meaning, is set on the place of narrative signifier. Claude Bremond has explained the multilayered quality of narrative message through a close-up on its sign structure. Pier (2003) attempts to offer a reading, which takes into account the translation between French and English: "The narrative (*récit*), without which there cannot be a 'narrative message,' tells (*raconte*) a story (*histoire*) that possesses a structure 'independent of the techniques by which it is taken over.' [- -] '[t]he *raconté* has its own signifiers, its *racontants*: these are not words, images or gestures, but the events, situations and behaviors signified by these words, these images, these gestures'", (p. 78). Pier (2003) clarifies that the Saussurean components of a linguistic sign, *signified* and *signifier*, cannot be equated to Bremond's view of story content and its telling (*raconté*), respectively. This is because, although narration utilizes primary sign systems

(for example, written language), narrative meanings are produced on the second stage signification. In contrast to the Saussurean components of a linguistic sign, in the context of narrative (*récit*), the story constituents (events, situations, and behaviors) act as *narrative signifiers* (i.e., *racontants*), and the told (*raconté*) acts as *narrative signified*, and gains its meanings through the totality (its significance, role, motive etc.) of what is told (see Table 4).

TABLE 4 Bremond's approach on the semiotic structure of narrative, demonstrated through the composition of the Saussurean sign model.

Narrative signified: the told, i.e. the structure of story functions
Narrative signifier: events, situations and behaviors the story includes

Schmid (2007) considers narrative creation and the varying nature of choices, which the author is expected to do during the process. He suggests a four-level model in purpose of structuring narrative production and specifying the selections coming author's way on each levels. The four levels of Schmid's (ibid.) model are the following:

1. Geschehen consists of the totality informing situations, characters, and actions, which are represented explicitly or implicitly, or, which are implied logically through the narrative work.
2. Geschichte means the same as Tomaševskij with fabula: the selected events in *ordo naturalis*.
3. Erzählung is a result of the composition that organizes the happenings in *ordo artificialis*.
4. Präsentation der Erzählung, as it is the perceptible representation of the Erzählung in a particular medium.

The subject is invented on the first level (Schmid 2007), as it is the "implied raw material of narrative processing" (Pier 2003, p. 84). When proceeding on the second level, manifold tasks are conducted, including the selection of the constituent events and characters, and, the particularities of them. As a result, the perspective is determined regarding perceptive, ideological, spatial, temporal, and implicitly, besides, linguistic selections. When getting on to the third level, the composition is created through organizing processes, which include linearization (temporal selections, acceleration, and deceleration) and permutation of segments in a synthetic composition. Finally, when proceeding on the fourth level, the selections are done according to the repertoire of the employed media form. Only the results done in this latest connection can be reached through empirical observation. (Schmid 2007.)

The practices related to the levels seem to be congruent with the areas of Chatman's model, discussed earlier. When Chatman's approach stresses espe-

cially the end-product aspect of narrative, Schmid seems to consider narrative in accordance with an idea that a meaning is a process. Schmid's model presents narrative constitution in the form of a construction process, where the first invention gradually develops towards complete, but also parsimonious, consistent, and, concrete (perceivable) *understanding*.

2.4 Narratological Views on the Communication Structures of Narrative

In narratological theories, the parties of narrative communication are approached through a communication structure of a text. The parties are seen to operate within a hierarchy, on nested levels. Pekka Tammi (1985) presents this structure as so called Booth-Chatman model (see Figure 1), which he constructs from Booth's (1961) and Chatman's (1980) previous works. From the totality of a narrative work, Tammi (1992) separates characters, narrator(s), and a text. In the Booth-Chatman model, on the outermost level, outside a narrative work, there are a real author of the work, and a real reader, i.e., a recipient. These are the subjects of biographical studies and reception studies, respectively. Inside a narrative work, the rest of communicative agents occur as structural elements. The characters perceive the fictional world. The narrator tells that the characters perceive, and the text represents that the narrator tells that the characters perceive. (Tammi 1992.)

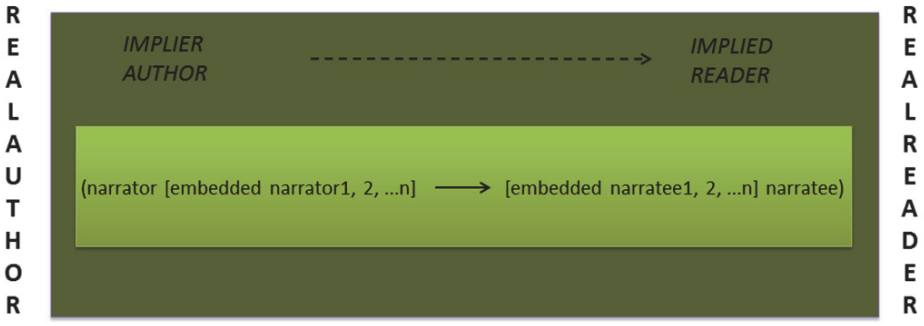

FIGURE 1 The Booth-Chatman model modified from Tammi (1992).

In the Figure 1, direct communication is presented as a solid arrow, whereas indirect communication is presented as a dash arrow. The story is told by the narrator-agent, whose concept pair, the object of narration, is the more or less specified and portrayed audience, i.e., *narratee* (Prince 2003; Tammi 1992, p. 57).

The narrator's relationship to the story world and the story events crucial shapes the narration. For example, it is possible that a character temporarily or permanently assumes the role of a narrator. Furthermore, if a narrator tells a story, in which a character tells another story, the character must be considered as an embedded narrator, and it hierarchically gains its own embedded audience. Another relationship inflecting narration forms between a narrator and the textual process, by which the narration is conveyed, for example, as a novel, a film, or a digital game. The textual process itself is out of narrator's reach, but can be reflected by it. (Tammi 1992.)

In the Booth-Chatman model, between the innermost (narrator-narratee) and the outermost (real author–real reader) levels, there is a level of the concept pair *the implied author* and *the implied reader*. In what follows within this subsection, I focus on this concept pair. Tammi (1992) determines that the implied author indirectly communicates to the implied reader. However, this pair of concepts does not denote character-like figures, and thus, if the author or the (potential) reader are portrayed in the text, these figures do not denote what is meant by the implied author or the implied reader.

The implied author, albeit being characterized by Booth (1961) as artificial 'second self' of the author or "implied image of the artist" (p. 73), essentially embodies the values, norms, attitudes and world views, which are spread out around the work, and which constitute the view, which the author *wants* the reader to assume through the reading of the work (Booth 1961, p. 73). Booth (ibid.) determines that "[o]ur sense of the implied author includes not only the extractable meanings but also the moral and emotional content of each bit of action and suffering of all the characters. It includes, in short, the intuitive apprehension of a completed artistic whole; the chief value to which *this* implied author is committed, regardless of what party his creator belongs to in real life, is that which is expressed by the total form" (pp. 73–74, *original emphasis*). Thereby, by indicating a promise that there exists a meaning that originates from the appropriate selections made within the text, implied author initiates the dynamic and the opening direction of narrative communication.

Rimmon-Kenan (2003, p. 87) proposes that the implied author should be understood as *the reader's idea of the author*. This approach seems to denote implied author as an authorial intention as reconstructed by the real reader, an intention, which in itself is artificial construct, and not necessarily identical with the intentions of the real author.

The implied reader, a term suggested by Wolfgang Iser (1978), embodies the predispositions a text requires in order to execute its reading effects and to enable the reader's participation in the meaning of the text. The implied reader, as well as the implied author, is a structure-related construct of a text, which cannot be identified with the real reader, and which, yet anticipates the real reader, does not necessarily define him by any means. The implied reader is not located in the text, but is *brought about* by the text. The role to be assumed by the reader of a text must be somehow pre-structured, which, according to Iser (1978), "holds true even when texts deliberately appear to ignore their possible

recipient or actively exclude him" (p. 34). Thereby, the implied reader "designates a network of response-inviting structures, which impel the reader to grasp the text" (ibid.).

Two interrelated aspects must be recognized from the implied reader: it designates both "the reader's role as a textual structure, and the reader's role as a structured act" (Iser 1978, p. 35). Iser compares the relationship between the two aspects to the relationship between intention and fulfilment. Therefore, although the implied reader designates a structural construct, it is "fully implemented only when it induces structural acts in the reader" (Iser 1978, p. 36).

Thus, the implied reader essentially is a matter of guidance internal to the text and according to which the real readers participate to construct meanings through reading. As Iser (1978) explains, "literary texts take on their reality by being read, and this in turn means that texts must already contain certain conditions of actualization that will allow their meaning to be assembled in the responsive mind of the recipient" (p. 34) For Iser, reading is a dynamic interaction between a text and a reader, and the reading process aims at beyond the text. The text "offers guidance as to what is to be produced, and therefore cannot itself be the product" (Iser 1978, p. 107).

The implied reader relates in the real reader on that implied reader is "the conditioning force behind a particular kind of tension produced by the real reader when he accepts the role" (Iser 1978, p. 36). Iser considers various self-constructs, by which we separate within ourselves, for example, the self as a reader and the other self, who conducts other daily tasks. Iser's phenomenological approach on reading lays ground for focusing on its cognitive side as construction of meanings: "Reading a narrative is seen as a dynamic set of mental processes in which past information is continually related to current understanding and hypotheses about future information, and in which gaps left by the text are filled, so that its [- -] indeterminacy is removed" (Schneider 2005, p. 484). The particular kind of tension, fueled by the implied reader, grows into between the real reader's self, which brings the personal life knowledge to the reading process, and the reading self, who adopts the prestructrured reader's role.

Iser (1978) determines three components, which constitute the prestructured reader's role. Firstly, there are the different perspectives represented in the text. Secondly, reader constructs a vantage point from which he joins the perspectives together. Thirdly, there takes shape a meeting place where the perspectives convergence. The meeting place is also understood as the meaning of the text, which requires the vantage point in order to be organized.

Chatman (1980) offers the concept of 'reading out' for separating mere mechanical reading from the interpretive reading. He describes that "'reading out' is qualitatively different from ordinary reading, though so familiar as to seem totally 'natural.' But the conventions are there and are crucial, even if patently self-evident and self-instructional – the arbitrary figures, like the frame, the puffs of smoke to indicate speed, and the bubbles for dialogue or thinking are effortlessly learned by very small children. But that they are conventions is

clear enough" (Chatman 1980, p. 41). In the citation, Chatman emphasizes the guidance of social conventions. However, Iser's and Chatman's views on meaning, constructed through reading, can be reconciled with each other, as it was included already to Saussure's view on language that the basis of a sign system lies on social foundation, and the existence of a sign-sides (both signified and signifier) is essentially psychological.

2.5 Narrative Cognition or Cognition of Narrative?

The thematically oriented narratologists (Bremond, for instance) assumed that there exists an order, or "syntax", of human behavior which precedes narrative, and can, thus, be exemplified by narrative. By contrast, on the field of cognitive narrative studies, or cognitive narratology, narrative has been approached as a mental tool, competence, or tendency, which gives the character for human experience.

According to several well-known psychologists' theorizing of the last decades, narrative is considered to have a crucial role on individual's cognitive development, thinking, remembrance, identity construction, mental well-being, communication, and learning. Narrative plays a role in both day-in-day-out -activities, in life-long processes, as well as, in cultural and social processes that take place over generations. Within the limits of this chapter, three conceptions on the role of narrative regarding knowledge and understanding are briefly introduced, namely those proposed by Donald Polkinghorne (1988), Bruner (1991, 1996), and Herman (1997, 2003, 2004). The aim is not to go into the potential differences between the views at length, but to construct a coherent understanding of the human being's psychological ground of narrative function and usage, and of the cognitive characteristics of narrative meaning.

Polkinghorne (1988) approaches narrative as "a scheme by means of which human beings give meaning to their experience of temporality and personal action" (p. 11). Because narrative meaning is recognized a cognitive process and a mental operation, it cannot be directly observed. Instead, what can be observed, are the end-products, which emerge through a narrative creation process. Besides, due to the characteristics of narrative meaning, Polkinghorne (ibid.) recommends hermeneutic methods as the most appropriate tools for understanding narrative.

In order to understand Polkinghorne's view, let's start with fundamentals: One of the many components of human existence, Polkinghorne (1988) recognizes, is *the mental/meaning realm*, the two others being the realm of material, and the realm of organic. The realm of meaning is not seen as a thing or substance, but as *an activity*. The mental realm is generated through more or less conscious activities, which fasten on the contents of awareness, and as a result, produce names of elements, and connections or relations among the elements. However, language is seen as a secondary component regarding the realm of meaning. It does not play an epistemological role, but the one of organizing

knowledge and transmitting communication. Polkinghorne (1988) says: "The emergence of human beings from life in general to reflective consciousness and language is a threshold change that has brought about a unique level of reality that I will call 'the order of meaning'" (p. 2). Thus, the order of meaning is the result of the human beings' meaning making activities.

Bruner (1996) says that "[u]nderstanding consists in grasping the place of an idea or fact in some more general structure of knowledge" (pp. XI–XII). According to Polkinghorne (1988) "[t]he question, 'What does that mean?', asks how something is related or connected to something else" (p. 6). The connections between elements are created by recognizing various types of relations. Polkinhorne (1988) specifies the following types of relations:

- sameness (and non-sameness)
- similarity (and non-similarity)
- being an instance of something (or not)
- standing for something else (or not)
- being a part of something (or not)
- being a cause of something else (or not)

When generating meanings, these relations can be further combined. Polkinghorne (1988) notes that narrative meanings especially rest on the latest two points. In narratives the meaning is produced by the connections and relationships *among* the events of a story, and *against* the whole of the story. Narrative meanings rest on both the creation of episodic units, and, at the same time, on offering the framework for understanding the events. (ibid.)

Polkinghorne (1988) notes that culture maintains tools, like language, by which it passes on knowledge on meanings, as well as, on the signifying system itself. The function of language is to manage the complex of ideas and transmit the ideas in communication processes. In the processes of producing meanings and composing ideas, i.e., representations of external reality, language plays an instrumental role, and is, thereby, a secondary element of meaning. However, Polkinghorne notes, the grammatical, rhetorical, and narrative structures of language impose forms upon by *filtering* and *organizing* their objects, and thereby constitute subjects and objects in the order of meaning. (ibid.)

Furthermore, in form of myths, fairy tales, histories, and stories, culture transmits shared beliefs and values, i.e. "positive models to emulate and negative models to avoid" (Polkinghorne 1988, p. 14), which are necessary to know in order to participate as a member to that culture. In accordance to this, Bruner (1996) states that culture shapes minds. For its members, it provides the narrative mode of thinking, by which individuals can receive their identity and agency (Bruner 1991, 1996), or, as Polkinghorne (1988) explains, with narratives of their own lives people "construe what they are and where they are headed" (p. 14). An individual applies the cultural models of identity and agency, and realizes himself through a narrative version he creates of himself as situated in the world and in various events (Bruner 1996).

It is inherent for narratives that the focus is not on actions and events whatever, but, especially on such actions and events, which have an influence

on human beings (Polkinghorne 1988). Bruner (1991, 1996) stresses that a crucial feature of a powerful narrative is that it—while recognizing and confirming canonical understandings (and related narratives)—significantly *breaches* implicit canonical scripts. Thereby the narrative mode of thinking is an efficient tool for situating anomalies encountered in a context of what is considered as normal, contemplating the anomalies, and getting by them (Bruner 1991).

The narrative mode of thinking is an irremovable part of constructing coherent experiences. Bruner (1991) contrasts the narrative mode of thinking to another cultural tradition, the logico-scientific mode of thinking. Besides, he states: "We devote an enormous amount of pedagogical effort to teaching the methods of science and rational thought [- -] For these are the 'methods' for creating a 'reality according to science.' Yet we live most of our lives in a world constructed according to the rules and devices of narrative" (Bruner 1996, p. 149). When compared with the logico-scientific mode of thinking, the narrative mode may seem to appear as a more innate vehicle of meaning making. However, Bruner (1996) has argued that this would be a false assumption, and that it should be seen as a fundamental educational goal to support children to develop also the narrative mode of thinking, by which they can "envisage a place for themselves – a personal world" (p. 39). There are differing motives behind the uses between the two modes of thinking. Polkinghorne (1988) explains Bruner's earlier thinking: the logico-scientific mode "searches for universal truth conditions, whereas the narrative mode looks for particular connections between events" (Polkinghorne 1988, p. 17).

Herman (1997) describes human cognition by stating that "the mind draws on a large but not infinite number of 'experiential repertoires,' of both static (schematic or *frame*-like) and dynamic (*script*-like) types" (p. 1047, *my emphasis*). Frames represent knowledge related to situations at a particular point in time, whereas the concept of a script refers on a knowledge structure that represents a set of expectations on how a sequence of events takes place across time. Scripts "store these finite groupings of causally and chronologically ordered actions – actions that are required for the accomplishment of particular tasks" (Herman 1997, p. 1048).

Herman (1997) argues that scripts are essential for the comprehension of a text, discourse, or a story. From its recipient, the act of storytelling especially requires the application of script-based knowledge of the world in order to set the narrative in motion. Furthermore, Herman (1997) notes that narratives are able to be linked to stored world knowledge in enormously different ways, so that they can activate it for their processing or embed it as a theme.

Herman (2003) highlights that narrative offers the basic strategy for managing subjects in respect of time, process, and chance. Furthermore, narratives are essential mental tools especially in problem solving situations. Applying Vygotsky's (1980) idea of psychological tools, i.e., symbolic cultural artifacts, Herman (2003) defines narratives as *cognitive artifacts*, which are materials or objects enabling cognition, or, making cognition more effective. Herman (2004) points out that "stories do not merely *have* but also *constitute* a logic, narratives

being not just semiotic structures but also strategies for structuring and thereby making sense of experience – for problem solving in the broadest sense" (p. 56, *my emphasis*). Herman (ibid.) calls this two dimensional logic also *story logic*. The logic that stories have pertains to narrative as an end-product, and "consists of strategies for coding circumstances, participants, states, actions, and events in the 'storywords,' that is, the global mental representations that interpreters are prompted to create when they read or listen to a narrative" (Herman 2004, p. 50). The logic that narratives are, or constitute, highlights narrative as a process, and consists of various communicative strategies by which storytelling takes place in the broader system of communication (Herman 2004).

Bruner (1991, 1996) characterizes that when using the narrative mode of discourse or thinking, it is implicitly accepted that narratives create versions. Regarding narrative versions, and in accordance with Herman's view on narratives as cognitive artifacts, John A. Robinson and Linda Hawpe (1986) explain how a story can offer an explanation for an individual on a problematic situation encountered. The narrative explanation is a relative truth, which is accepted with the awareness that there could be other stories constructed with alternative explanations. In the form of analogical stories, narratives can offer a subtle form of instruction for problem solving especially in cases, when the problem relates to a touchy subject. (ibid.)

Both Polkinghorne (1988) and Bruner (1996) approach narrative meanings (referring to the same as Bremond with 'narrative messages') not available to be directly derived from some discrete components. Bruner (1996) calls *ambiguity of reference* the characteristic of narrative, due to which "[w]hat a narrative is 'about' is always open to some question, however much we may 'check' its facts. For its facts, after all, are functions of the story" (p. 140). Polkinhorne (1988) describes the effects of the function structure of a story by stating that the story events can get new meanings retrospectively, after the outcomes of the events and the narrative in its entirety are known.

Polkinghorne (1988) emphasizes the importance of plot, or storyline, as the means by which specific, individual actions and events are made to cohere into a narrative. According to Polkinghorne (ibid.), plot is the vehicle, which connects events by implicating the *significance* of the events. It tacitly motivates the narration, as the reasoning behind the construction of a plot is comparable to the reasoning conducted to develop a hypothesis. Thus, when plot turns a list of events, or a chronicle, into a story, it brings about the function structure of the narrative. Furthermore, when there is more than one plot, this "can provide a meaningful constellation and integration for the same set of events, and different plot organizations change the meaning of the individual events as their roles are reinterpreted according to their functions in different plots" (Polkinghorne 1988, p. 19). The meaning of a single story event is interpreted by contemplating the interactive relationship between the event and the plot (Polkinghorne 1988).

The novelty value of cognitive studies for the project of narrative studies, especially regarding so called cognitive narratology, has been questioned, for

example, by Ryan (2010). However, the concepts and conceptions related to the activities and modes of mind proposed in cognitive psychology seem to play a supportive role behind the recent attempts of developing a media-free view of narrative.

2.5.1 Learning and Narratives

> [I]n pedagogical terms the use of narrative implies that learners and faculty alike do not perceive their learning materials to be closed off, dead, inert, isolated, complete. Using narrative entails being personally involved with the learning materials, seeking out relevance, offering interpretation: 'the process of telling and interpreting stories inserts me into the environment I strive to know, teaching me that I do not know my world if I consider myself somehow outside or beyond that world'". (Hazel 2008, p. 210.)

Above all, narrative pedagogies highlight the narrative characteristic of human experiences, the heuristic structure and support narrative offers for problem solving, and the social aspect of narrative meaning making, which enables the co-construction of meanings (Diekelmann 2001). Furthermore, narrative pedagogy may be understood as a "kind of meta-pedagogy within which other pedagogies may emerge when needed and where overall meaning emerges from and is co-constructed from 'conversations' amongst those involved in the learning environment" (Diekelmann 2001, cited by Hazel 2008, p. 209).

On the educational field, the epistemological transition from knowledge to narrative has resulted in the transition from the transmission-absorption - learning approach to the salience of constructivist learning theories. (Roberts 1997), On the other hand, M. Carolyn Clark and Marsha Rossiter (2008) have pointed out that if we agree with the psychological theorists, such as Polkinghorne (1988) and Bruner (1990), and Theodore R. Sarbin (1986), that when encountering experiences, narrative is central regarding meaning making and coherence construction, then narrative always is part of constructivist learning approach.

Bruner (1996) says: "[w]hen we understand something, we understand it as an exemplar of a broader conceptual principle or theory" (p. XII). The statement implies a negotiation process, the process where knowledge is constructed through learners' own cognitive efforts. Learners must employ their mind actively and become involved "in the product of the activity, the knowledge that is acquired" (Hein 1998, p. 35). Thereby the end-product of constructivist learning process entails, additionally, experiential and personal knowledge of one's own learning. The new knowledge and conceptions, i.e. meanings of the subject matter are constructed as a result through a process, where learners conduct negotiations between their existing knowledge structures, and new experiences or phenomena, which differ from each other (Applefield, Huber & Moallem 2000). The new knowledge must be internalized and adapted together with the learners' previous knowledge. Thereby constructivist approach on learning foregrounds, not only new knowledge, but the learning experience itself, as well. The journey is as important as the destination.

Moreover, the constructivist conception of learning includes that learners' conclusions are validated, not against an external standard of truth, but according to whether they are understandable and reasonable. New concepts gain validity if they create coherence with other ideas and may lead to action, i.e. are usable. (Hein 1998.)

In terms of various pedagogies, narrative relates, for example, on the experiential learning, problem-based learning, and critical pedagogy, transformational learning, and besides, it is closely connected to the idea of life-long learning (Clark & Rossiter 2008; Clark 2010). According to the experiential learning approach, our experiences are the objects of our meaning making process. One of the most central tenets of experiential-based adult learning is that "experience is the adult's living textbook" (Lindeman 1961, cited by Clark & Rossiter 2008, p. 64). However, during the last decades, several notable narrative psychologists have impressed on that it is through narrative how we access the prelinguistic experiences and construct the meanings from the chaotic stream of life (Polkinghorne 1988; Sarbin 1986; Bruner 1990). According to this view, we cannot encounter the reality as it is, and thus, it rests upon one's ability and way by which narrative is constructed, what kind of meanings the experience can have (Clark & Rossiter 2008).

Bruner (1996) describes how, in ordinary use, the narrative mode of cognition is mainly automatic: "We live in a sea of stories, like the fish who [- -] will be the last to discover water, we have our own difficulties grasping what it is like to swim in stories" (p. 147). Within the specific pedagogies, which emerge under the wide field of constructivism, and which are based on the utilization of narrative, the automaticity of narrative thinking has been exploited instrumentatively, or, turned meta-cognitively apparent to the learner.

Martin Cortazzi and Lixian Jin (2007) comprehensively outline that narrative learning stands for "learning from, about, and through stories, and learning through reflecting on the experience of narrating and the narrating of experience" (p. 645). Clark and Rossiter (2008) consistently state that narrative learning is a twofold concept, which conveys both the variety of learning through stories -approaches and the conceptualization of the learning process itself through learner's own narration of the learning experience (by writing learning journals etc.).

The learning through stories -approaches contain the aspects of stories heard, told and recognized (Clark & Rossiter 2008). The stories heard -aspect complexly and holistically engage the learner to the reception and interpretation process. A good story is capable of evoking learner's earlier experiences so that those can be experienced real again. Within the second aspect, the learner tells the stories. In this case, learner must link some personal experiences to a given subject in order to tell the story. When the connection is created, the new learning occurs. Within the aspect of stories recognized, the learner becomes aware of the narrative form of experiences. After realizing this, the learner is able to understand, how human life is constructed narratively, and to employ narrative thinking in order to position themselves in events and agency. Fur-

thermore, the awakening to the narrative characteristic of experiences equips learners with understanding on how groups, societies and cultures employ the narrative mode. These insights enable learners to critique, question, and identify meaning making structures that may strive to influence us and hold up usage of power. When learning through narratives –approach is applied on this level, narrative learning links to critical pedagogy and may provide the emancipatory possibilities related to it. (ibid.)

Diekelmann's narrative pedagogy offers an example of discipline-specific interpretive phenomenological pedagogy, where the focus of learning shifts from epistemology to "engendering community interpretive scholarship" (Ironside 2006, p. 479). Diekelmann's narrative pedagogy was originally developed in the context of nurse education. Instead of covering some appointed knowledge and contents, the object with Narrative Pedagogy is to engage teachers and learners into public, communal, and converging thinking and conversations wherein, as a result, new potential practices and reforms of education can be envisioned. In the conversations, teachers and students share their collective interpretations, co-create, negotiate, and transform knowledge, and challenge the assumptions that underlie the field-specific practices and the related pedagogical practices. By applying Diekelmann's narrative pedagogy, teachers can engage learners to adopt multiple perspectives to the situations they encounter. (Ironside 2006.)

Similar to narratives recognized -approach, described above, in Diekelmann's narrative pedagogy, the learners' are challenged to contemplate the effects that their background, assumptions, and experiences may have in their practices. Furthermore, as the learners contain both the novices and the teacher's, the ultimate goal of development seem to be more communal- oriented than targeted to the development of one's personal understanding.

Additionally, narrative has been contemplated as an effective support for problem solving (Robinson & Hawpe 1986; Jonassen & Hernandez-Serrano 2002; Herman 2003). The problem, in this context, may refer to practical or dilemma-type situations, as well as, to personal psychological challenges.

According to Herman (2003) narrative offers a knowledge structure that can be applied as a judgment heuristic or 'meta-heuristic', when experiences are chunked in order to be interpreted. Furthermore, narrative as a cognitive artifact supports, for example, cognitive mapping of how things exist located in space. Besides, Herman (1997) has discussed how narratives attach, require, or "index" (p. 176) varying nature and scope of world knowledge. For instance, Herman (1997) explains how children's fiction consolidate and reinforce such script-type knowledge on which narrative competence depends, whereas narratives targeted to adults may require significantly more script-based background knowledge in order to being comprehended.

Story as a support structure of memory have been discussed in the learning context as a special type of schema – *a story schema* – which enables coherence creation and a reduction of the data that must be remembered (Hazel 2008). According to Jean M. Mandler and Nancy S. Johnson's definition story schema

means "idealized internal representation of the typical parts of a typical story and the relationship between those parts" (Hazel 2008, p. 203). Both Bruner (1996) and Herman (2003) emphasize that in a given situation narrative offers a mental tool specialized in representing conventional and unconventional, and provides tools for managing the expectations, which arise from what is considered typical, against the actual outcomes, which are encountered.

Robinson and Hawpe (1986) state that as contextualized accounts narratives gain the strength of conveying "the particularity of any episode" (p. 114), while at the same time, narrative possesses the ability to convey information by implication. Furthermore, through versions, narratives can offer various perspectives to the subject. When narrative learning approaches are applied in problem solving situation, the perspectival characteristic, together with the examination of various narrative versions, can open up various perspectives on the problem and on the possible solution paths (Hazel 2008; Jonassen & Hernandez-Serrano 2002).

With respect to problem solving, stories have been proposed to serve as a heuristic aid, and as a form of instruction in a straightforward or a more subtle way. Stories about experiences of successful problem solving can naturally and powerfully form lessons for novices, who cannot have such first-hand experiences yet (Jonassen & Hernandez-Serrano 2002). Stories can be applied as valuable tools for task analysis and as an aid of instruction. When a learner looks for a relevant case story for the problem at issue, he "should reflect on the similarities and differences between the problem situation and the given case or story" (Jonassen & Hernandez-Serrano 2002, p. 69), and finally, when going through several stories, he "will be expected to 'reflect in action'" (ibid.). Jonassen and Hernandez-Serrano (2002) sum up previous studies according to which experts solve problems by relying on past experiences more than on abstract principles. This was true especially in the case of decision making situations with high degree of uncertainty (ill-structured problems). The case stories applied in expert problem solving increased the professional's situational awareness, and helped to generate relevant expectations and options.

The benefits of getting familiar with previous cases, where professionals successfully perform problem solving, not only offer the learner substitutes for first-hand expectations, but also, demonstrate how an expert figures out *how to make the decision* on what to do (Polkinghorne 1988; Jonassen & Hernandez-Serrano 2002; Clark & Rossiter 2008). This is to say, narratives can implicitly demonstrate how to conduct professional reasoning.

Additionally, the method of constructing analogical stories, as discussed by Robinson and Hawpe (1986), is a practice for resolving person's personal predicaments. Robinson and Hawpe (ibid.) approach their application as a sort of instruction in problem solving. The method of constructing analogical stories exploits the multilayered structure of narrative meaning – the particularity of its episodes against the implicitly conveyed second stage meanings – in order to consider subjects, which would be hard to understand or accept if presented or discussed explicitly. During the analogical story construction, the problem is

approached as an unsuccessful story, and the new story is created so that it "(a) concretizes the problem, makes it explicit and gives it definite structure; (b) provides a natural basis for raising questions about causal relations and for modelling goal-oriented action; and (c) distances the listener [- -] emotionally to a sufficient degree to sidestep that person's defensiveness and anxiety" (Robinson & Hawpe 1986, p. 122). By offering this kind of indirectly conveyed information, the one constructing the analogical story can subtly guide the way out from an anxious situation

Below, I put together what seem to be the most central advantages of narrative in respect of problem solving. Narrative:

- is applicable as a judgment or meta-heuristic for interpreting experience
- offers the learner representational tools for chunking the ongoing flow of experience into bounded and usable structures. Isolated data can be:
  - examined,
  - identified,
  - selected, and
  - connected to episodes, and thereby
  - various phenomena can be attached into causally and chronologically connected wholes.
- supports cognitive mapping of how events and things are situated somewhere in the world.
- provides two separate levels for considering behavior:
  - the level of narrative communication,
  - the level of the storyworlds.
- can be applied on problem-raising, as well as, providing instruction for problem-solving.
- supports memorization as a schema.
- offers tools for managing the expectations regarding the 'typical', against the actual outcomes, encountered in a given situation.
- offers categorizing components and types of relations, which can structure causal thinking
- enables the construction of narrative analogues.

2.6 Narrative Studies and the Disparity of Media Forms

In narrative studies, which have occurred close to the turn of the new millennium, attempts have been made to meet the requirements of the growing diversity of digital media forms (for example, Eskelinen 2012; Ryan 2001, 2004c) Especially, a medium-free narrative definition has been an object of development. In what follows, in the first sub-chapter, I describe, how two narrative theoreticians, Rimmon-Kenan and Ryan, have approached the current circumstances of multimedia conveyance of narratives. In the second sub-chapter, I focus on the central implications of digitalization for narrative, especially in terms of game narratives, as proposed by Janet Murray, Aarseth, and Ryan.

2.6.1 In Search of Medium-Free Narrative Definition

New media forms entail new modes of receiving, consuming and experiencing narratives. As a result, instead of being considered as an end-product, in the newer considerations, narrative has been viewed more as an end-product *and* a process (Rimmon-Kenan 2006). Hence, in the more recent developments of narratology, the object of study has extended to cover the mental activities gathering and carrying particular types of knowledge.

The moderately medium-specific view is characterized by Herman (2004) as follows: "although narratives in different media exploit a common stock of narrative design principles, they exploit them in different, media-specific ways, or, rather, in a certain *range* of ways determined by the properties of each medium" (p. 51). The new regularities emerging from the new modes of receiving, consuming and experiencing inflect the process of constructing meanings, and are, thus, part of the complex present-day narrative "grammar". Thus, in comparison to the narratologists of the structuralist phase, the new narratologists have been concerned with the *phenomenon* of narrativity, in particular.

In consequence of the newer developments of narratology, the juxtaposition between narration by giving account for something (the diegesis) and offering representation through imitation (the mimesis) has been challenged (Rimmon-Kenan, 2006). Additionally, at contemporary narrative theories, the concept of narrative sometimes stems from sources other than structuralist narratology, for example, such as psychoanalysis. Furthermore, significantly, the interest of modern narrative studies is not confined only to objects valued as art. (ibid.)

Rimmon-Kenan (2006) proposes two principal features that should play a central role in a new media-free definition of narrative. The features are *double temporality* and *transmitting* (or *mediating*) *agency*. The first feature refers to the separation between story events that inevitably gain a temporary aspect, also called story time, and the presentation of events in a text[5] that takes place on its own time level – also called, narrating time or discourse time. With the second feature, *transmitting agency*, the position of narrator and its narrating voice are broadened to cover "a composite mediating agency" (Rimmon-Kenan 2006, p. 16), which manifests, for example, in films as the positions of screenwriter, director, producer, director of photography, and editor. According to Rimmon-Kenan (2006), a narrative definition, which covers the two abovementioned features, should be able to yield also such media forms, which do not necessarily utilize narrators in the same sense as conventional verbal language-based media.

Ryan (2001, 2004a, 2004b) specifies the distinction between two potential situations: *to be narrative*, and *to include narrativity*. Ryan (2004a, 2004b) refers to the latter case also with the expression *narrative script*. In the first case, a semiotic object has been created with the purpose of producing a narrative script in

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5 The term 'text' being used in a general way covering all types of signifying systems.

the minds of the audience. In the latter case, an object has the capacity of producing a narrative script irrespective of the author's purposes. (Ryan 2004b.)

Ryan (2001) notes that narrativity is not coextensive with separate cultural forms, such like literature and novel, and should be considered independently from the questions of fictionality and tellability. Ryan (ibid.) approaches narrativity as a medium-free, semantic quality, i.e., as a quality especially related to the signified –side of narrative, and which is a matter of degree. Furthermore, narrative scripts can be conveyed through various modalities: by telling, which is the diegetic mode, by showing, which is the mimetic mode, or, by enacting, which is executed "as a self-rewarding activity" (Ryan 2004a, p. 417). The last-mentioned mode of conveying narrative is exemplified as a typical mode of computer games. Regarding the relationship between narrative script and its multiform material manifestations, Ryan (2001) explains: "the abstract cognitive structure we call narrative is such that it can be called to mind by many different media, but each medium has different expressive resources, and will therefore produce different concrete manifestation of this abstract structure." (par. 12).

The distinction between to be narrative and to include narrativity clarifies, why a work, which is aimed at being narrative, does not necessarily realize this target – it does not gain sufficiently degree of narrativity, and is, then, unsuccessful. On the other hand, some other subjects, such as history or human life, have been considered as narratives even though they are not narratives in the intentional sense, which is to say, the subject *possesses narrative potentiality*. These kinds of subjects contain narrativity and are thus able to evoke narrative scripts in the receiver's mind. (Ryan 2004a)

Ryan recognizes narrative both as a type of meaning (Ryan 2004a), and as a sign (Ryan 2001). Thus, narrative takes place as a mental image raised as response by a certain stimuli, and exists as a sign, which constitutes of a signifier (i.e., discourse) and a signified (i.e., a story) (Ryan 2001, 2004a). Though both the subjective-cognitive and shared-semiotic characteristics of narrative coexist, Ryan sets the weight on the narrative mental image -based signified, which determines the degree of narrativity.

According to Ryan (2005a), story as a mental image and a cognitive construct "concerns certain types of entities and relations between these entities" (p. 347). The mental representation of a story is further defined by three necessary characteristics. Firstly, it has to generate a mental image of a world including characters and objects. Secondly, in that world, there must occur some surprising "changes of state that are caused by non-habitual physical events" (Ryan 2005a, p. 347). Thirdly, "[i]n addition to being linked to physical states by causal relations, the physical events must be associated with mental states and events" (ibid.), including emotions, goals, and plans. Ryan's narrative definition, which further specifies the components of the mental picture of a story, seems to cohere with Herman's (2004) view, when he emphasizes, using Hjelmslevian terms, that "[w]hat defines narrative [- -] is the form of its content side" (p. 52).

Additionally, Ryan (2001) demands that the representation of narrative have to be *thematically unified and logically coherent*. When specifying the requisite components of the mental representation of a story, Ryan (2005a) states that it is under the third item – the linkage between physical and mental events and states – when narrative gains its closure, coherence, motivation, and intelligibility, and the causal-mental network of connections turns the events into a plot of a story. Ryan's approach on story as a mental image and cognitive construction relates on her previous work on possible worlds -related narrative theorizing. In that context, Ryan (1991) originally determined the reception of narrative by *the principle of minimal departure* as follows: "when readers construct fictional worlds, they fill in the gaps [- -] in the text by assuming the similarity of the fictional world to their own experiential reality" (Ryan 2005c, p. 447). This, again, seems to match with Herman's (1997) view on how especially adult's narratives require plenty of script-based background knowledge from the reader. Thus, the characteristic of being thematically unified and logically coherent depends on how the interpreter (reader, recipient) constructs the plot, which for its part, depends on the interpreter's knowledge of human life.

2.6.2 Narratives of Digital Games

In the year 1997, two pioneering books were released on the nature and potentials of the new digital media forms, and on how they may appear from the narrative theoretical viewpoint. The works are Murray's (1997) *Hamlet on the Holodec* and Aarseth's (1997) *Cybertext: Perspectives on Ergodic Literature.*

Murray (1997) makes an effort to consider the possibilities of digital media from a media-specific viewpoint. She points out how various media forms are capable of recognizing and conveying some kind of essential core of human being's shared experiences on a certain moment in time: "Every age seeks out the appropriate medium in which to confront the unanswerable questions of human existence" (Murray 1997, p. 280). Murray (1997) gives an example of how Shakespeare, during his own lifetime, so innovatively harnessed soliloquy to inspect individual's separateness and inner acts of pondering – in which culminates the subject of Renaissance fascination. She encourages researchers and designers to inspect the innovative potentials of digital media forms regarding the great questions of our own time and of the times incoming: "I am not asking if it is possible to translate a particular Shakespeare play into another format. I am asking if we can hope to capture in cyberdrama something as true to the human condition, and as beautifully expressed, as the life that Shakespeare captured on the Elizabethan stage" (Murray 1997, p. 274).

What Murray (1997) highlights is the algorithm-based foundations of a digital work: "The most ambitious promise of the new narrative medium is its potential for telling stories of about whole systems. The format that most fully exploits the properties of digital environments is not the hypertext or the fighting game but the simulation: the virtual world full of interrelated entities, a world we can enter, manipulate, and observe in process. We might therefore expect the virtuosos of cyberdrama to create simulated environments that cap-

ture behavioral patterns and patterns of interrelationships with a new clarity" (pp. 280–281). In this context, Murray (1997) discusses the kaleidoscope-like nature of digital media, by which she means the ability of a computer to create huge amount of versions from limited number of elements. She proves to tentatively recognize that digital systems are especially capable to convey procedural knowledge, discussed more closely regarding digital games by Ian Bogost (2005, 2007). Unfortunately, what captured the attention regarding Murray's ideas during the following years of early game studies, was, at root, her choice of words "narrative" and "telling stories" (this is discussed further in section 3.1).

In *Cybertext: Perspectives on Ergodic Literature*, concerning especially text-based adventure games[6]. For considering the elements of the communicational model of classical narratology (discussed in the section 2.4), Aarseth (1997) proposes additional level of negotiation between the story events and the user's progression. For further specifying the level, Aarseth (ibid.) proposes the concepts *intrigue*, *intriguee*, and *intrigant*. Intrigue represents "a secret plot in which the user is innocent, but voluntary, target [- -] with an outcome that is not yet decided—or rather with several possible outcomes that depend on various factors, such as the cleverness and experience of the player" (p. 112). The voice both describing the narrative situation and posing challenges or riddles for the player is intriguing. The target of the intrigue, the intriguee, is the implied user, who is forced to solve the puzzles in order to proceed in the game. The term intriguee is parallel to narratologists' narratee, implied reader, and the main character, which are, according to Aarseth (1997), communicational positions, whose mutual distance collapses in adventure games. Intrigant "is neither implied author nor narrator but an immanent adversary who inhabits rather than transcends the game" (Aarseth 1997, p. 127).

The intrigue-intriguee-intrigant concepts have been criticized, for example, by Liv Hausken (2004) and Ryan (2006). Hausken (2004) criticizes Aarseth's approach for representing the medium blindness of Anglo-American tradition, and warns that "in contrast to the reader or viewer, the user cannot be treated analytically as an entity external to the text" (p. 396). Ryan (2006) does not recommend the application of the communication model of classical narratology by any means in the digital game context, as, according to her, the model does not apply in mimetic mode of discourse, employed in, for example, film, theatre, and computer games.

When Ryan (2004a) discusses the most relevant features and consequences of digitalization regarding textuality and narrativity, she points out that in digital contexts narratives can vary regarding discourse, point of view, and plot. Despite her elsewhere presented attempts of constructing a media-free definition for narrative (discussed in the previous section), in this context she states: "A truly digital text, or narrative, is one that cannot be transferred into the print medium without significant loss" (Ryan 2004a, p. 416). Ryan's (2004a) list for

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6 In addition to adventure games, Aarseth discusses also other kind of ergodic texts, i.e. texts where "nontrivial effort is required to allow the reader to traverse the text" (Aarseth 1997, p. 1).

the most essential features of digital works includes algorithm-driven operations, reactive and interactive nature, performantial aspect, multimedia capabilities, networking capabilities, volatile signs, and modularity. The reactive and interactive nature, as well as, the performantial aspect are consequences of the first-mentioned algorithm-driven operations –property. The performantial aspect requires that the written inscription of the work must be executed. In this sense Ryan (2004a) compares the situation of digital texts to the situation of the classical performing arts; similar contrast exists between the invariability of the drama script and the variability of its executions. In practice, during the execution of a digital work, "the player's actions function as links between segments in the sense that they trigger the execution of code, which leads to changes in the display and in the global state of the system" (Ryan 2004a, p. 419). However, as Ryan (2004a) notes, from the feature of interactivity it does not follow that the system would always act in the way the user intends.

According to Ryan (2004a), the point where digital works essentially differ from prints is the *productive mode of interaction*, which is typical to computer games. "It is only when the user contributes elements to a developing story, allowing plots to be dynamically generated at run-time, that a system's narrative productivity can be raised above the level reachable by print media. In this type of system the player's actions perform an individualized narrative by responding to the affordances of the textual world" (Ryan 2004a, pp. 423–424). In its simplest form, the plot variation can be executed in the form of blank spots, which are able to be filled by the user, and are embedded in a pre-determined narrative script (a general method in early interactive fictions).

In adventure games, the player typically impersonates a character, which has a mission. Typically, the plot in adventure games comes up to the players, if they are able to complete the task and solve the problems (Ryan 2004a). When the game story follows a rigid and fixed plot, the game features variation only in the form of player's unsuccessful attempts (Ryan, 2004). Even though the player may be able to conduct various actions within the limits of semantically finite system of the game, and there may exist several endings for the story, "the variety of the player's input does not translate into an equal variety on the level of plot" (Ryan 2004a, p. 425). Instead, the plot is kept on the intended track by ejecting the ineligible player actions as extradiegetic or para-textual ones (Ryan 2004a).

Ryan (2006) proposes a separation between the internal and external types of involvement in digital media. These features are extremes of a continuum, rather than absolutely discrete options. In the case of internal involvement, the users situate themselves in the fictional world, for example, through empathizing with an avatar, whereas in the external type of involvement the users situate themselves outside the fictional world in a god-like position. The latter approach can, besides, be likened to navigating a database. (Ryan 2006.)

Ryan (2004a) suggests that digital games could be seen to embody the most versatile utilization of various point of views in digital environments, and offers a description, which is applicable largely on diverse games: "Many

games enable players to switch from a god's eye perspective, third-person display, through which they see their character as a moving object on a map of the playing field, to a first-person, horizontal perspective that shows the game world to the players through the eyes of their avatar. One view is for the planning of strategy in a suspended time, and the other for the execution of moves in the heat of the game-action" (p. 423). However, Ryan (2006) notes that in order to design a meaningful repertoire of player activities, the designer should apply an economical principle, when creating limits for player agency. This is because too much choice may lead to "confusion, frustration, and obsession with the missed opportunities, as well as to logically inconsistent sequences of events, than to give the user a sense of freedom and empowerment" (Ryan 2006, p. 123). Additionally, with respect of creating pleasurable digital narratives, regarding the development of the plot, Ryan (2004a) reminds about the tenet that is not unique particularly to digital works: the development of the story should be foreseeable at some extent, but the story should fulfill the user's expectations in an unexpected way.

3 DIGITAL GAMES AS A REPRESENTATIONAL FORM AND PRACTICE OF ENJOYMENT

3.1 On Separating Digital Games from Narratives

In this chapter, I consider the early stages of the modern digital game studies, focusing on the academic discussion on computer games and narrative, which took place at the very beginning of the 21st century. Essentially, the discussion focused on some design-oriented questions, such like the potential and weaknesses of game-based narratives, and on ontological questions of whether games can be said to be stories or narratives (Aarseth 2012).

In *Hamlet on the Holodec,* Murray (1997) says: "[e]very game, electronic or otherwise, can be experienced as a symbolic drama. Whatever the content of the game itself, whatever our role within it, we are always the protagonists of the symbolic action" (p. 142). This is the view, which initially raised strong opposition among the digital game -orientated researchers, who defended formal and playing situation focused approaches on digital games (see, for example, Eskelinen 2001; Aarseth 2004).

In "Ludology Meets Narratology", Gonzalo Frasca (1999) proposes that video games could be better understood by way of the application of the basic concepts of forthcoming game and playing -focused discipline, ludology, *along with* the concepts of narratology. Frasca (ibid.) applies the division on *paidea* and *ludus*, originally introduced in by Roger Caillois (1961), on the digital game context. Ludus games include a clear well-defined set of rules, and a winning condition, whereas paidea games, like adventure games, offer more freedom to the player. According to Frasca (1999), ludus games can be compared to plot-centered narratives, whereas paidea games are more like narratives, which give more observations of setting. Frasca further compares the process of playing a ludus game with the narrator's conduct of the story events as presented by Bremond's (1973) network of narrative possibilities (see the section 2.2). Frasca, hence, implies that when considering the potentially divergent projects of narrative communication and game playing, the narrator's and player's efforts

could be seen comparable. Frasca's (1999) structure of ludus process is composed of beginning, development, and result, and the result leads to triumph or defeat. The most significant difference between Frasca's and Bremond's models culminates with the agent. When Bremond focused on the narrator's space of selections, in Frascas's ludus playing process, the agent would be rather the implied player, yet Frasca terms the agent a player. Besides, the implied author of a game would be the one who *defines* each step of the beginning-development-result -model, whereas, regarding a *game narrative*, the definitions of game progress do not necessarily correlate or be correspond to the narrator's position.

In "SIMULATION 101: Simulation versus Representation" Frasca (2001) reasons that games and narratives are ontologically different things, because of different ways of dealing with reality. Games are simulation-based, whereas narratives are representation-based – and the narrative representation always is incomplete (ibid.). By contrast, simulations model the behaviors of their subject by modeling the rules that govern the system. Frasca states that, for an external observer, the outcome of a simulation manifests as a narration of events. However, even if simulation in this sense can contain a huge amount of potential stories, it is, after all, more than the sum of its parts, or, to be precise, the sum of its possible outcomes. This is why, according to Frasca (ibid.), simulation must be *something bigger* than narrative.

Besides, Juul (1999) attempts to clarify the differences between narrative and digital game in his master's thesis *A Clash between Game and Narrative*, and in "Games Telling Stories?" (2001). It seems that, instead of considering the relationship between narrative and game, in the two above-mentioned publications, Juul ends up imposing the hypothesis that digital game is not a narrative medium. Finally, he identifies the medium-free characteristics of narrative as a downright narrative phenomenon -related problem.

In "The Gaming Situation", Eskelinen (2001) acidly strives to prove Murrays's approach on digital game playing as symbolic drama uninteresting: "It would be equally far beside the point if someone interpreted chess as a perfect American game because there's a constant struggle between hierarchically organized white and black communities, genders are not equal, and there's no health care for the stricken pieces [--] after this kind of analysis you'd have no intellectual future in the chess-playing community" (par. 28). Even though the excess of the above-presented citation, in the same article, Eskelinen (2001) crystallizes the since often-cited observation that "in art we might have to configure in order to be able to interpret, whereas in games we have to interpret in order to be able to configure" (par. 7).

Aarseth (2004), continues on the interpretation situation in games, and states that the most obvious difference between game and narrative arises from ambiguity. However, at first he gives game examples, which rather highlight game genre conventions, and the related implicit rules and clues of interpretation, rather than formal game rules: "In Tetris, I do not stop to ponder what those bricks are really supposed to be made of" (Aarseth 2004, par. 10), and "[i]n Doom, there is no moral dilemma resulting from the killing of probably

innocent monsters" (ibid.). In the latter case, the focus turns on the genre conventions of first-person-shooters (FPSs), more specifically, on the kind of player-ponderings, which specifically would be contrary to typical FPS-genre related expectations. Finally, Aarseth (2004) attempts to catch the attention on the autonomy of formal game rules by his chess-example: "You can be an expert chess player without playing any other game, but to understand even a single novel you will need to have studied numerous others" (unnumbered).

In order to participate the discussion, whether it is, or not, relevant to discuss about digital games and narratives in the same breath, Ryan (2001) asks that if narrativity were totally inessential to the enjoyment of games, why designers put so much effort into the creation of high-quality graphics, narratively themed interfaces and playing tasks. Additionally, Ryan (ibid.) raises to the foreground the needs stemming from the field of narrative studies by demanding the use of properly defined concepts and the expansion of the catalog of narrative modalities.

Basing on her narrative definition (discussed in section 2.6.1), Ryan (2001) gives explanation for the complex, which game and narrative are able to construct:

> "What justifies us in calling movies and drama narrative is the shape of the mental representation formed in the mind of the spectator; if this spectator were to translate his mental image into language, he would produce an act of narration - a diegetically presented narrative. A dramatic narrative is thus a virtual, or potential diegetic one. With games we can extend virtuality one step further. The player performs actions which, were he to reflect upon them, would form a dramatic plot – though this plot is not normally his focus of attention during the heat of the action [- -]. Games thus embody a virtualized, or potential dramatic narrativity, which itself hinges on the virtual diegetic narrativity of a retelling that may never take place" (Ryan 2001, par. 34).

Ryan's account reveals the multilevel structure of potentials included in the relationship between digital game and narrative, where other than narrative-related factors determine and govern the construction of meanings. Besides, it suggests a solution on the dead ends meet with the game and narrative -related discussion, when narrative has been unsuccessfully considered as solely language-bound phenomenon (for example, Juul 1999, 2000).

After the active years of "the debate", Aarseth (2012) has got back to the subject, and proposes the term ludonarrative in order to discuss the possibilities of intersection between narrative and digital game. Games may permit the player to influence on the story events, which, for their part, serve in various narrative functions. Aarseth (ibid.) proposes a game typology basing on how narrative functions occur with respect to player's opportunity to make selections in a game. There is the option of three narrative-related game types, namely the linear games (using fixed kernels and flexible satellites), the hypertext-like games (offering selection between kernels and fixed satellites), and the "creamy middle" quest games (offering selection between kernels and flexible satellites). Additionally, the typology includes the fourth case of non-narrative games.

In retrospect, it can be said that the discussion, often referred as *the debate between ludologists and narratologists*, obviously occurred for the effort of new disciplinary trying to achieve identity and autonomy (Aarseth 2012). As Aarseth (ibid.) characterizes, the so called debate concerned "1) whether games are narratives and 2) whether narrative theory should be applied to this kind of entertainment software" (p. 133), which is to say, the discussion was oriented towards ontological and design-related questions. The ontological discussion, as far as it has mirrored to the concept of narrative, has unavoidably suffered the state of disunion and uncoherent use of concepts on the field of narrative studies. In terms of design oriented research, the focus of the discussion ran mainly on value judgements, and not so much on the possibilities of realization. For example Joshua Tanenbaum (2013) notes that, as a consequence of "the debate", particular harmful attitudes, especially regarding the assumed playing activities and players' attitude, have remained to hinder game narrative -related research and design.

3.2 Rules, Agency, and Goals – Curiosity, Enjoyment, and Appropriateness

> Everything we know so far about the experiential components of games – that they are complex sensual and psychological systems, that they create meaning through choice-making and metacommunication, that they sculpt and manipulate desire – are tools for crafting narrative experiences. (Salen & Zimmerman 2004, p. 381)

Bogost (2005) describes the special ability of digital games in conveying procedural knowledge. The procedural feature of games does not require game narrative. However, through narrative, it is possible to represent the components of the procedural system *manifesting* in a fictional world, and further, to represent how the components function in relation to each other, thereby constituting a *system that produces the story events*. In narratives the focus is on the story events – what happened and why – as the events are essential to the existence of narrative. For procedurality, the configuration of material-spatial-temporal agents, i.e. the conditions, are essential. Thus, if compared to a procedural system, the story events are just momentary outcomes, an occasional manifestation of the (part of the) system.

The players are orientated towards the understanding of the operations of this kind of procedural system by the game rules, which is true if game rules are approached according to Ang's (2006) rule typology. Besides, this curiosity is the source of player's enjoyment, as it creates the state of mind, or ability, which is often called as player *agency* (Wardrip-Fruin 2009). Before player agency can be discussed more closely, we have to take a brief overview on game rules.

Katie Salen and Eric Zimmerman (2004) separate *operational*, *constituative*, and *implicit* digital game rules. Operational rules are often explicitly told for the

player, as those are "the guidelines players require in order to play" (Salen & Zimmerman 2004, p. 130). Regarding operational rules, Salen and Zimmerman consider digital games and non-digital games comparable. Constituative rules are logical and mathematical, and operate in a digital work as a formal structure under the "surface" of the game. The player actions may be conducted according to the operational rules, but in a digital game, the constituative rules make these activities possible and constitute the requisites. Implicit digital rules are social agreements regarding etiquette, sportsmanship, and other game behavior related implied rules. (ibid.) Thus, playing experiences are formed by rules, some of which are learned in social situations, others received directly from the game materials, and the rest acquired during a longer timeline, through player's own efforts.

Salen and Zimmerman (2004) state that through the relationship between operational and constituative rules *the formal identity* of a game can be recognized. Presumably, then, this is something that feeds players' curiosity in the long run. This is not true only because the player would like to know, how the given game differs from other same kind of games, but because operational and constituative rules "work in concert to generate the formal 'meaning' of a game" (Salen & Zimmerman 2004, p. 139). In this context, it seems, the formal identity of a game is near to the procedural meaning of a game.

Ang's (2006) four-part rule typology seems to offer a close-up on the intersection between Salen and Zimmerman's (2004) operational and constituative rules. Ang's rule typology presents a problem-solving structure of playing, where players often have to manage on their own (the names of rule types, proposed by Ang, are offered in parentheses):

- What is my goal? (*extrinsic ludus rules*)
- What can I do? (*symbolic paidea rules*)
- How the virtual world responds to my actions? (*semantic paidea rules*)
- How I best achieve the goal? (*intrinsic ludus rules*)

Focusing especially on narrative games, Karen and Joshua Tanenbaum (2009) propose that when game playing and a story intersect, agency could be viewed as *a commitment to meanings*. By the commitment-part of the definition, Tanenbaum and Tanenbaum (2009) mean *player-performers' improvisation within a game story*. As players' improvisational actions have to take place through a system largely determined by the game designer, the commitment is further considered as a conversation between the player and the designer, conducted via game story. Furthermore, Tanenbaum (2013) specifies that the types of actions, which the game software makes possible for the player, and interaction, as created by the designer, constitute the core relationship between the three: the player, the software system, and the designer.

When Tanenbaum and Tanenbaum (2009) define agency as commitment to meanings, they explain that the meaning-part foregrounds *the players' intents*, which underlie their choices. Player's goals and plans are the resources for their actions, but are also formed and reformed in the game context (Tanenbaum

2013). Players actions and conceptions of the system develop through mutual interaction during the playing process, a process which can contain checking instructions from a manual (Tanenbaum 2013), exploration, and experiments (Tanenbaum 2013, Wardrip-Fruin 2009). Wardrip-Fruin (2009) phrases similar idea as a game designer's guideline: "agency requires evoking the desires a work satisfies" (p. 345).

Tanenbaum (2013) has proposed that so called subversive playing should be seen as a part of the player's game literacy and communicative competence building process. According to Tanenbaum (2013), this "often requires actions from players that push at the boundaries of the game system as designed. In doing so, players engage in types of play that are apparently subversive, but which are motivated by goals that have nothing to do with subverting the will of the designer"(p. 8).

By pointing this out, Tanenbaum hopes to defuse, what is from designers' perspective a threatening conception of a player. Tanenbaum (2013) refers to Aarseth's (2004) description of a player, who makes "a mockery of the author's intentions", and to Steve Gaynor's characterization of players as "agents of chaos" (cited by Tanenbaum 2013, p. 2), who makes the medium of digital game ill-equipped to convey narratives pre-authored by the designer. Instead of adopting such suspicious and adversarial approach to player's subversive playing, Tanenbaum (2013) proposes, designers should understand this kind of playing as a part of player's endeavor to more deeply understand the design parameters of the system, to make sense of it and to enjoy it as it is designed. Even cheating in a game – as it often happens only after the game is first completed according to the rules – can be seen as a more experienced player's way of extending the life of a game or consuming its content more completely (ibid.). As the designer's attempts to hinder the player from going their separate ways will create just artificial conflicts between the designer and player, and harms the game narrative development, Tanenbaum (2013) particularizes that the designer must focus on designing for "*desired* play, rather than designing *against* undesirable play" (p. 5).

3.3 Varying Paths: The Concept of 'Narrative' in Learning Game Design Research

Within the concept-oriented part of this study, I attempted to sum up how the concept of 'narrative' has been applied on the research, which focuses on serious and learning game design. The academic discussion on learning game narrative design proves to be fragmental, which results, firstly, of the many disciplines involved in the learning game design -related research, and secondly, of the many approaches and definitions of narrative available. I have synthetized the account of the discussion on four types of narrative-related approaches: the story event -based approach, the structuralism-inflected

approach, the game scenario -based approach, and the cognitive psychology -based approach, which in itself includes several differing sub-approaches.

In the sub-sections, I introduce the four types of approaches on narrative in the learning game design context. Furthermore, the approaches are characterized in terms of the advantages coming up for narrative learning support.

3.3.1 Story Event -Based Approach

In learning game design research, it is quite common approach to consider narrative as predefined story events. In such cases, the often mentioned advantages of narrative for learning support include opportunities to apply well recognized and comprehensible structures of content, for example the Aristotelian three-act -model (Kickmeier-Rust et al. 2010) or, the Hero's Journey -model (Hoffmann & Riemenschneider 2004). The last mentioned model originates in the field of structurally oriented comparative mythology, in Joseph Campbell's (2008) *The Hero with a Thousand Faces*. Campbell was concerned about the capacity and the mechanism of stories, by which they convey deeper knowledge or truths over times, and in all cultures. Thus, he focused on the story contents and discussed the "morphology of adventure" (Campbell 2008, p. 30). Campbell's model has been widely applied as storywriters' inspirational aid on mainstream film industry. Sometimes the model is introduced as Vogler's model (in the context of learning game design research, see Hoffmann & Riemenschneider 2004) because Christopher Vogler adopted it to the Hollywood film industry in the eighties.

Ulrich Wechselberger (2009) considers how to integrate the learning content of a learning game in a subtle way. For this purpose she proposes that "the connection between learning tasks and gameplay could be strengthened by creating a functional, semantic relation between them" (Wechselberger 2009, p. 94). Besides, she adds that "it might not be possible to connect any kind of information to gameplay. For these contents one has to identify and elaborate further '*information carriers*' within digital games" (ibid.). This is where narrative comes in. Wechselberger (2009) applies Craig Lindley's (2005) idea on semiotics of the ludic spaces. According to Lindley, narrative, game, and simulation represent independent formal subsystems of a ludic system, and each of them has its own design principles and modes of creating meaning. Furthermore, conforming Lindley, Wechselberger presents the (Aristotelian type of) fixed three act –structure as a common narrative structure. In the proposed game model, which bears resemblance to Frasca's (1999) application of Bremond's network of narrative possibilities, the three steps include "establishment of the conflict, playing out its implication and finally solving it" (Wechselberger 2009, p. 95).

3.3.2 Structuralism-Inflected Approach

Some researchers of learning and serious game design have focused on narrative as a semiotic structure, in which the story level and the level of narration or discourse are explicitly distinguished from one another. Researchers in this con-

text often focus on some particular subject matter regarding the means of expression, for example, less well-known film storytelling means, gathered from outside the Hollywood filmmaking tradition, and applied to the needs of serious game design (Marsh et al. 2008). In traditional Hollywood film, the transparency of narration has been an aspired characteristic. However, learning game designers may want to render an experience through a user interface. Thus, it has been proposed that by using appropriate means of expression (e.g. narrative perspective and focalization) deliberately, suitable rhythm between contemplation and engagement could be established, and the focus of the player-learner can be steered on the desired direction without restricting interactivity (Marsh et al. 2008).

Additionally, the foundations of narrative constitution in digital learning game context have been discussed in several articles. Carlton Reeve (2009) clarifies: "If the term 'story' describes characters, events and plot, 'narrative' describes how the story is told" (p. 75). He further completes his definition by referring to the story content as specified by J. Hillis Miller originally in 1990 in "Narrative", in *Critical Terms for Literary Study* (edited by Lentricchia & McLaughlin 2010): there is a need for progression, which moves through the initial situation to reversal or some other kind of change, and leads towards a final revelation. Additionally, the player's role in game narrative is pursued to understand more profoundly. Reeve (2009) notes that the player's freedom in a computer game always comes true within tightly defined boundaries. Instead, what is always unique is the player's exposure to the game elements and the experience deriving from this process. The player's process of discovery, together with the player perspective determined by a game designer, creates the player's arising organization of the information. But then the definition turns problematic. Reeve (ibid.) explains that "[t]he player's own actions become part of the story itself and the player a central character: he or she becomes embedded within the narrative rather than a passive observer, thereby becoming a co-creator of the story" (p. 77). If interactivity – the player's latitude with game environment, object or character between more or less restricted options, and the perceptible output of the game program to the player's action – is seen as a part of *the means of expression* (and thus, as a part of the game-like discourse), then the above suggested division to story and narrative may be broken down along with Reeve's description of player attendance at the story creation process. Besides, the role and the position of a player in game narrative seem to flicker. Do the actions of the players create the story on the content level, or rather, are the players constructing or actualizing the level of narration through the options offered, and thereby, indirectly, also revealing the story content?

Ruby McDaniel, Stephen M. Fiore, and Denise Nicholson (2010) define narrative "as the expression of a story through a particular medium" (p. 22). The definition implies clear distinction between the content and its expression via the selected vehicle, and it seems to put the emphasis on the latter. However, in this case the focus is essentially on the story contents and the theories related to tension creation. McDaniel, Fiore and Nicholson (2010) propose a Narrative

game taxonomy, in which plot (i.e., story events), character, and environment are highlighted as fundamental dimensions through which questions of serious game narrative design can be considered.

In the context of Structuralism-inflected approach, the advantages of narrative regarding the player activities begin to take shape more profoundly. Narrative structure can be utilized for creating an experience (Reeve 2009), in which players can undergo feelings through identification – especially empathy – and thus upgrade their understanding (McDaniel, Fiore & Nicholson 2010). In that way the narrative immersion and knowledge transportation are further described. Finally, stories may "provide scaffolds for reaching the 'gray areas' of tacit instruction that are not easily taught using learning objectives and engineering design guidelines" (McDaniel, Fiore & Nicholson 2010, p. 16). Furthermore, narrative helps to embed the learning objectives within the game objectives (McDaniel, Fiore & Nicholson 2010), in which they include that through narrative design the instructional design objectives can be tied to game design. Thereby information presented in a virtual world can be modified or tied together with game elements. For example, the acquisition of learning materials can be set as a part of the quests or missions of a game (ibid.).

3.3.3 Game Scenario –Based Approach

According to Wim Westera et al. (2008), scenarios are predesigned events, and a scenario-based game is a "[g]ame with some predefined narrative structure for the triggering of appropriate learning experiences and activities" (p. 431). In the design framework described in Westera et al. (2008), the scenario design is based on a location builder, an object builder, and a role builder, each of which are specifying the attributes related to each element during the game playing process. Finally, there is also a particular scenario builder that "helps in specifying the logical conditions that make up the game play scenario" (Westera et al. 2008, p. 426). Thereby narrative seems to be constructed by the players, who go through the scenarios that represent information of story events, put together by the systems responsible for the particular elements. The game scenarios, for their part, are designed by a game designer through the scenario constituents and the ranges of attributes related. These elements define *the story potentiality*. For programmatic implementation, the elements of story potentiality have to be defined through predefined rules, which are to be formulated logically unambiguous specifications (and/or requirements).

The central characteristic of the scenario-based approach is the novel role of a player as a story consumer. From the player's viewpoint, they are discovering stories, whereas from the designer's viewpoint, players are actualizing stories. Besides, a single scenario as a constituent of game narrative may be playing a different, multifaceted, role than, for example, a single story event in the Aristotelian three-act -model. A scenario may be designed as an independent entirety, and it may be connectable with several other scenarios – instead of being just a link in a chain. Westera et al. (2008) emphasize the design of an environment, which opens up for players as a "context for learning that mimics real

world situations, displays ambiguity and conflicting information and offers large degrees of freedom" (p. 423). Hence, the game scenario -based approach tests the frontiers of so-called *potential-based narrative* proposing (from the player's viewpoint) unpredictable and lifelike contents to narrative design. Hence, the design approach poses a question: How far it is meaningful to use the term narrative to describe a content that may be closer to something like "life simulation"?

Sebastian A. Weiß and Wolfgang Müller (2008) present another design approach, which attempts to complicate the basic division between story and narration: "Artificial characters taking the role of actors within a plot play an important role in the concept of Interactive Storytelling" (p. 478). Their approach includes that the artificial characters, Interactive Digital Storytelling (IDS) agents, as they call them, or more generally non-player characters (NPCs), may receive also other than the quite common roles of virtual guides or tutors: "As in stories, their role could be to interact with each other as a set of characters to present a dramatic storyline; and as in games, they have the potential to serve as all sorts of sparring partners for players to interact with, such as representing the bad guys, or companions who ask for help" (ibid). This discussion creatively approaches artificial characters on the same level with the player, and considers the possible divisions of various concurrent playing-, narrative communication, and learning –related roles. However, the game-related roles mentioned above are discussed in the article merely in terms of the story contents.

For serious and learning game design, the game scenario -based approach allows designers to create structured, predefined experiences in time while taking players' personal preferences into consideration (Westera et al. 2008). Narratives are seen as being capable to carry various types of information, including implicit cultural values, opinions, emotions as well as solutions (Weiß & Müller 2008). Additionally, it is tentatively suggested that, for example, dramatic arc can be utilized in the context of scenario design, when pursuing to implement the processes of cognitive apprenticeship, including problem-based learning and situated cognition, especially in terms of scaffolding and fading (ibid.).

3.3.4 Cognitive Psychology –Based Approach(es)

When cognitive psychology is applied to serious and learning game design, narrative is discussed as one of the fundamental mental tools (Dickey 2006; Hokanson & Fraher 2008; Friedlander 2010), but also as an artifact full of meaning capacity on social, cultural, and cognitive dimensions (Hokanson & Fraher 2008). Dickey (2006) synthesizes Bruner's, Polkinghorne's, and Robinson and Hawpe's narrative-related views and ideas and constructs a rich overview on narrative as a mental tool, suitable especially on problem solving. According to Dickey (2006), narrative offers a cognitive frame, within which experiences and their meanings can be constructed against a meaningful context. Besides, narratives are utilized to guide actions, in that they offer a schema that includes the categorizing components (like protagonist, conflict, and outcome) and the types

of relations (like temporal, motivational, procedural). Thereby narrative can offer the means for structuring causal thinking, and furthermore, for revealing what is believable in a certain situation. Thereby, narrative problem solving environments require a player to synthesize and analyze information, in pursuance of offering a tool for navigation in a multimedia environment. Moreover, narrative illustrates learning subjects and provides examples. (ibid.)

With respect to Roberts' (1997) observation regarding the epistemological transition from knowledge to narrative, in learning game design context, David Schaller (2011) proposes that perhaps the transition has further moved on to the transition to systems and systemic knowing. Regarding the benefits of narrative, he adopts Bruner's view, but focuses mainly on the linear appearance of narration. Hence, the juxtaposition of systemic rule sets of digital games and linear narration of narratives seems to be the natural conclusion.

Brad Hokanson and Robert Fraher (2008) approach narrative as a social, cultural, and cognitive artifact, and argue that the application of Campbell's monomyth (i.e., the Hero's Journey -model) in learning game design could help with the problem of how to connect instructional experiences with cognition. Hokanson and Fraher (2008) suggest that the universal structure of monomyth could enable extensive cross-cultural adaptability and cultural variation while retaining its basic essence. Moreover, monomyth is assumed to have a special status in human cognition as a conduit of knowledge. Quoting Campbell and Moyer it is even assumed that "monomyth is built on the deeper cognitive structure of the brain" (Hokanson & Fraher 2008, p. 29). Hokanson and Fraher (2008) explain: "[i]f one views narrative as being tied solely to the generally linear aspects of storytelling, the application of the monomyth to instructional design may suffer" (p. 31). It is implied that this particular structure *in its entirety* contains some special efficacy, and thus, during narrative design, the stages of the monomyth should be applied to guide the story formation regarding the story function structure. Additionally, according to Hokanson and Fraher, (2008), the hero's situation in monomyth offers a subject for comparison with the situation of a learner in a learning situation. This offers a novel approach on how to tie the subject of learning, the learning situation, and the fictional situation together on a meta-level. Above all, Hokanson and Fraher (2008), along with Dickey (2006), add to the benefits of narrative learning support the capacity of narrative to organize contents and utilize well-known structures (like a quest-structure) or familiar patterns (like archetypes) (Dickey, 2006), which can save time and mental bandwidth for concentration on the learning contents (Hokanson & Fraher, 2008).

Larry Friedlander (2010) proposes a design idea on how to support learning through narrative in a special type of serious games, which consider wide ranging cultural learning topics, such as religion. The proposed conceptual design tool is called *a sacred scenario* or *a sacred story* (Friedlander 2010). To illustrate his idea, and its applicability to serious game design, Friedlander presents an analogy between a myth, a ritual, and the world in a sacred scenario, and, a story, the actions, and an immersive environment in a computer game. Besides,

he distinguishes the stages of micro and macro narratives. Micro narratives are derived from the kinds of plots that "naturally divide into semiautonomous units, each with its own narrative rules and worldscapes" (Friedlander 2010, p. 129). Macro narratives, then, unfold over various story- or game worlds constructing the overall system of universe, where having an influence in one world may emerge as completely different effect in some other world.

Friedlander (2010) describes digital narrative with interactive characteristics applying hermeneutic approach and the terms of *play* and Hans-Georg Gadamer's *festival*. According to Friedlander, in the massive multiplayer games, for example, the collaboration with others should be seen rather as a communal form of festival than as individual playing. He explains: "For Aristotle, narratives are held together by the coherence of their internal parts. By contrast, in festival-like stories, narrative structures continually arise and dissolve through the play of interaction, as objects and events dissolve and recombine" (Friedlander 2010, p. 141). He goes even further by comparing how in theatre a performance actualizes a narrative in the same way as myth is actualized by a ritual. In this context, Friedlander (2010) proposes the exploitation of the feature, and which Ryan (2004) called the performantial aspect of digital texts and narratives. Friedlander explains how ritual in action includes both the story aspect – because it functions as a cultural signal – and the aspect of transformation: "It both narrates and effects a transformation" (ibid.).

Above all, Friedlander (2010) emphasizes the importance of the designer's controllability of story events and plot, and the need of an artistically high quality narrative including the opening, the middle part, and the denouement. He notes that good quality stories are capable to convey coherent view of life, and complicated narratives could convey systemic knowledge. Furthermore, narrative allows designers to create structured, predefined experiences in time, and take personal preferences into consideration at the same time, as long as interaction is appropriately restricted.

4 LEARNING GAME DESIGN

4.1 Design of Teaching and Learning

Within this chapter I have a twofold aim. Firstly, I shortly consider the objective of the discipline previously known as *instructional design*, later on evolved through cognitive-, social-, and cultural-psychological conceptions on human learning into the *learning sciences* (Jonassen, Cernusca & Ionas 2007). Secondly, two conceptual design tools are introduced. The first one is the Taxonomy Table proposed by Lorin W. Anderson, David R. Krathwohl, and Benjamin Samuel Bloom (2001). The model establishes a conceptual space within which any learning objective can be determined and further specified through sub-objectives. The second conceptual design tool described is the Framework for a Theory of Intrinsically Motivating Instruction, proposed by Malone (1980, 1981, 1982). The framework itemizes the key questions regarding how to create circumstances for intrinsically motivating learning.

Over three decades ago, Charles M. Reigeluth (1983) stated that learning theories focus on what learner does and what happens to the learner during a learning process, whereas instructional design theories are concerned with what the teacher does, descriptively or prescriptively. Reigeluth (ibid.) characterized instructional design as a linking science between learning theories and educational practices. It is "a body of knowledge that prescribes instructional actions to optimize desired instructional outcomes" (Reigeluth 1983, p. 5). Furthermore, instructional design models "indicate *what* the instruction should be like, whereas [instructional-]development models indicate *how* to make it that way. Instructional-design models are 'blueprints' of the instruction itself, whereas development models describe the steps that developers should follow in order to make the instruction" (Reigeluth 1983, p. 24).

During the last decades, the paradigm shift of designed instruction has evolved from behaviorism, via cognitivism, to constructivism (Applefield, Huber & Moallem 2000). Constructivist learning as an educational goal implies

that instruction is something else than an attempt to efficiently communicate to the learners about the knowledge (Anderson, Krathwohl & Bloom 2001).

Instead, constructivism has turned the emphasis of the instructional design on the creation of learning situations, where engagement and immersion are promoted, and learning takes place in practice field, such as simulations, and the actual or concrete fields of practice, such as apprenticeships. Besides, within constructivist application of instructional design, meaningful experiences are aimed to be created so that there is coaching and scaffolding, and occasions of reflecting the learning experience. Significantly, regarding instructional design, the above-described transition has meant an emergence of a new discipline, namely *the learning sciences*. In learning sciences, the design process rests on cognitive and social constructivist assumptions, and the context of learning interacts with the design process. The most central strength of this approach is the better tailored instructional solutions to specific learning problems. (Jonassen, Cernusca & Ionas 2007.)

As a result, it seems, Reigeluth's clear divisions, especially the what and how -division, attached respectively on instructional design and development, have started to merge. In the following citation, Anderson, Krathwohl, and Bloom (2001) posit the what and how -orientated questions afresh, differently: "The reasoned aspect of teaching relates to *what* objectives teachers select for their students. The intentional aspect of teaching concerns *how* teachers help students achieve the teachers' objectives, that is, the learning environments the teachers create and the activities and experiences they provide" (p. 3). What reflects through this understanding is the constructivism tenet, according to which the reality is made, not found (Bruner 1996).

The environment, the activities, and the experiences must constitute a consistent entirety that meets the learning objective appointed by the teacher. Thereby the learning objective (*the what* -aspect) seems to be the most predominant element, which dictates the design decisions with respect to *the how* -aspect. Thus, first of all, the designer should be able to define the learning objective. The properly specified learning objective should, besides, form a basis for any assessment of a constructivist learning environments, materials, and practices. (Anderson, Krathwohl & Bloom 2001)

For specifying various learning objectives (*the what*), Anderson, Krathwohl, and Bloom (2001) propose a Taxonomy Table, which is a revised version of the model known as Bloom's Taxonomy (originally proposed by (Bloom et al. 1956). Through the revised Taxonomy Table, learning objectives are approached through two dimensions, one for a noun, another for a verb, which together constitute a statement of an objective. The knowledge dimension includes four types of knowledge – factual, conceptual, procedural, and meta-cognitive – and a cognitive process dimension consists of six types of cognitive processes – to remember, to understand, to apply, to analyze, to evaluate, and to create. According to Anderson, Krathwohl, and Bloom (2001), any learning objective, including sub-objectives, can be determined within the intersections of the two dimensions. Furthermore, the typology of cognitive processes "provide[s] a

means of describing the range of student's cognitive activities in constructivist learning; that is, these processes are ways in which students can actively engage in the process of constructing meaning" (Anderson, Krathwohl & Bloom 2001, p. 65).

In terms of the intentional *how* aspect (how teachers can help students to achieve the learning objectives), Malone (1981) studied contemporary digital games in order to isolate such characteristics of computer games, which support players' motivation to play. He approaches early computer games by asking, how an understanding on digital playing-related motivation could increase and reinforce the expertise to design better instructional processes, materials, and environments. Thus, the design guidelines and the Framework for a Theory of Intrinsically Motivating Instruction, are applicable on various types of objects of design, not just on learning games (Malone 1981). Thereby, to apply Malone's framework in digital learning game design, is to make a kind of U-turn. However, when striving to understand the medium-specific characteristics of game-based learning and its well-informed design, Malone's framework offers a valuable starting point also regarding present-day game design.

The framework is established on three crucial concepts: challenge, fantasy, and curiosity (Malone 1981). Regarding game challenges, Malone (ibid.) emphasizes clear goals, which can be personally meaningful and offer performance feedback. Besides, the outcome of a game should be uncertain in principle. Furthermore, the challenges can be structured with variable difficulty level, adjusted by different ways, for example, as an automatic adaptation, or by the player's choice. (ibid.)

Malone (1982) offers the basic categorization of intrinsic and extrinsic types of fantasy and motivation of player-learner. He defines: "[b]y a system with fantasy, I mean a system that evokes mental images of physical objects or social situations that are not actually present" (Malone 1982, p. 67). The fantasy of a computer game can be intrinsic or extrinsic depending on if there is, or is not, a relationship between *player activities* and the fantasy presented (Malone 1981). The relationship in question is signifying: the player's game rule –based activities signify something within the game fantasy.

According to Malone (1980), intrinsic fantasy offers more benefits for learning support than the extrinsic one, because the first mentioned can offer prompt feedback by proportioning the mistakes – it can illustrate how far from the targeted behavior the player's actions are – and may even imply how to transfer the new skills or knowledge from games into the real world contexts. Besides, intrinsic fantasy design offers the instructor the opportunity to utilize both the cognitive aspects as well as the emotional aspects of fantasy to support the learning process and retention. (ibid.)

Furthermore, according Malone (1981) computer games maintain the optimal level of informational complexity, and evoke both sensory curiosity, as well as, cognitive curiosity. The first-mentioned refers to audio-visual effects, while nowadays it can include also more novel means, such as sensation- and motion-based effects. The cognitive curiosity refers to how learners tend to res-

onate, when they discover some deficiency in their own knowledge structures. The deficiencies can appear as incomplete, inconsistent, or rambling structures of knowledge. The learners are motivated by this observation, because they pursue coherence, completeness and economy in their knowledge structures. Besides, cognitive curiosity is evoked by informative feedback, which is both surprising and constructive. (ibid.)

4.2 What Are the Built-in Learning Objectives of Digital Games?

It may be obvious that digital games can offer pleasure and enjoyment, but why are they considered especially valuable regarding learning? How learning might be initially linked particularly to digital game playing, as several researchers assume (see, for example, Ang & Rao 2003; Becker 2005; Gee 2007; Osterweil & Le 2010)? In this section, I focus on Gee's approach on learning, and on how it always takes place during digital game playing, as he proclaims.

In *What Video Games Have to Teach Us about Learning and Literacy* Gee (2007) stresses that digital games inherently set a player the challenge of learning. Gee approaches digital games as products of culture, which require learning as an inherent and inevitable part of the practices involved to game playing. From this viewpoint, commercial off-the-shelf games often are far more advanced than learning or serious games thus far. As Gee (2007) puts it, "you cannot play a game if you cannot learn it [- -] gamers won't accept short or easy games. So game designers keep making long and challenging games and still manage to get them learned" (p. 3). Gee's (2007) view on the advantages of digital games for learning is grounded on the following three assumptions, which arise from situated cognition, New Literacy Studies, and connectionism, respectively:

- Human learning is situated within a material-social-cultural world
- Writing and reading should be approached as social and cultural practices
- As efficient pattern recognizer, human beings are at their best when they reason on the basis of patterns they have picked up through their actual experiences, and which are rooted in specific areas of embodied experiences.

Gee approaches learning, reading and writing, in addition to as mental skills and capabilities, as cultural-social competences that enable us to construct and share world and reality with others. These activities are conducted on *semiotic domains*, which Gee (2007) defines "human cultural and historical creations that are designed to engage and manipulate people in certain ways" (Gee 2007, p. 36). Various game types are just one type of example of semiotic domains. As well, different disciplines such as, art history or linguistics, offer examples of semiotic domains. Gee (2007) emphasizes the artificial characteristics of semiotic domains by saying that each semiotic domain is established with *external* and *internal design grammars*. Internal design grammar consists of the principles and

patterns in respect of which the typical and acceptable contents of particular semiotic domain are recognized. External design grammar determines the typical or acceptable social practices and identities recognized within the *affinity group* related to the semiotic domain. (ibid.) Affinity group, then, simply means "the group of people associated with a given semiotic domain" (Gee 2007, p. 27).

According to Gee (2007), meanings of signs and artifacts are constructed through reflection on the semiotic domain and the particular situation or contexts at hand. Thus, as meaning makers, human beings create situated meanings. The external and internal design grammars are founded on social conventions, as are, besides, semiotic codes, which guide the individual's process of interpretation.

Gee (2007) separates two types of learning, *active* and *critical*, both of which can occur also during digital game playing. Active learning involves that the learner, "at least unconsciously, understand and operate within the internal and external design grammars of the semiotic domain he or she is learning" (Gee 2007, p. 31). Besides, "the player must understand and produce situated meanings in the semiotic domain that this game, and games like it, constitutes" (Gee 2007, p. 32). Through situated meanings and the developing understanding of the internal design grammar of the game, the player is able to produce appropriate meanings and actions (Gee 2007). In critical learning, the player understands, besides, "how to think about the domain in a 'meta' level as a complex system of interrelated parts" (Gee 2007, p. 25). Additionally, critical learning involves that the player is able to attend to, reflect on, critique, and manipulate the design grammars at a meta-level, so that new meanings can be created through innovations. As a result, the learner can "appreciate the semiotic domain as a *design space*" (Gee 2007, p. 32), and thereby critical learning can lead to the transformation and development of the domain. Although Gee stresses the importance of context and situation, he also emphasizes that active and critical learning promote future learning and problem solving on the semiotic domain in question, and on other semiotic domains similar enough.

Furthermore, Gee (2007) discusses *appreciative systems*, where affective, cognitive, social, cultural, and personal meet each other and merge. In practice, appreciative systems of a given semiotic domain are created by the expert practitioners of that domain, and applied to evaluate the actions conducted in that domain. Appreciative system determines what is typical and expected regarding goals, feelings, desires and values among the insiders of the domain. (ibid.) Thus, appreciative system is an endogenous social lens, a kind of system of self-regulation, which governs the social conventions of experiencing and interpreting among the affinity group in question.

Gee (2007, p. 95) describes how he formed appreciative system for himself through playing *Deus Ex* and through other possible ways, by which he gathered information related to the game, and other games like it. That is to say, appreciative systems, while initially established by the expert practitioners, are recreated over and over again by the new members of affinity groups, for example, by new players. From outsider's point of view, the appreciative system -

related consciousness indicates one's familiarity with particular semiotic domain. Personally and socially it means more or less consciously constructed taste, attitude, and semiotic domain -related special "mode", through and by which a player constructs experiences, expectations and interpretations on that semiotic domain. Thus, there seems to be much in common between the concepts of 'appreciative system' and Iser's 'implied reader'.

Gee's approach on game playing and learning has been criticized by, for example, Jonas Linderoth (2010), who applies ecological approach to learning, and stresses that a player, who *seems* to learn and conduct challenging tasks during game playing, necessarily has not learnt to manage the tasks. Linderoth settles down to the erroneous assumptions, which might be done by a non-player bystander, who observes player's playing and attempts to infer if the player learns form the game tasks particular skills (which are set the external learning objective). From the design point of view, the external learning objective might be attached to the game tasks merely thematically. Linderoth's main conclusions include that, depending on the design decisions, the system may assist the player so that he or she does not have to develop new skills related to the game task or its theme. When Gee approaches learning from constructivist viewpoint, and takes account of the cultural-social aspects too, Linderoth's critique rests on a very differen learning conception, according to which learning is just a process of differentiating and making distinctions, instead of considering learning as a process of enriching. However, Linderoth's conclusions, for one, support the approach applied within this study: In order to understand game playing as a learning experience, it is valuable to strive to understand playing experiences *from inside* regarding to the effects of various design decisions on these experiences.

Richard Van Eck (2006) outlines that on the field of game-based learning (GBL) there exist three main approaches of utilizing digital games in teaching. The first case is "students as game designers" -approach, where students have to create their own computer games by some applicable game design program. The second case includes the employment of learning games, which are especially designed for particular learning purposes by educators and/or game designers. In the third case, commercial entertainment games are applied in learning situation.

When applying the "students as game designers" -approach, it is the students' task to reconcile the two semiotic domains together, the one of the game type imposed by the game design program, and the other offered by the teacher, i.e. the subject of learning. When using learning games or commercial entertainment games as a learning material, according to Gee's view, basically, the same questions should be presented in both cases. For instance, does the semiotic domain offer a valuable and worthwhile way to experience world, and in what sense? Does it entail an entry to a valuable affinity group? Does the domain offer resources, besides, for future learning on other advantageous semiotic domains? And finally, does the game offer the player possibilities to critical

learning and innovating? Thus, if a given digital game offers a valuable opportunity to learning depends on how the game-related semiotic domain is valued.

4.3 How Can Learning Game Designers Be Instructed?

> As designers of learning games, it becomes our job to master the conceptual core of each lesson. From middle-grade math to microbial evolutionary ecology—good design in learning games necessitates an attitude of intellectual curiosity. If we cannot find the play in our own learning, how can we possibly hope to convey that to our players? (Osterweil & Le 2010, p. 64)

Kafai (2006) separates constructionist and instructionist approaches to games, learning, and various design solutions of the applications. The constructionist approach corresponds to the students-as-game-designers -approach, where the designer's focus is on the game design program. According to Kafai (2006), the game design process can enable learners to construct new relationships to the learning objective -related knowledge.

According to Kafai (2006), instructional approach has understandably led to the design of learning games, where the content to be learned is integrated to the game idea. Kafai (ibid.) summarizes that "[a] common feature in nearly all those [instructional] games is that they integrate the game idea with the content to be learned" (p. 37). However, Kafai does not note the separation between extrinsically and intrinsically motivated playing, or, extrinsically or intrinsically situated game fantasy. The assertion that in learning games the content to be learned would be, as a rule, truly integrated with the game ideas sounds slightly extravagant, especially regarding the learning games of the early stage of the boom.

Besides, Kafai (2006) describes the problematic approach, which has characterized the early educational digital games: "a deeper philosophical issue is hidden within the premise of instructional games: that we need games to 'sweeten' the learning of difficult ideas" (p. 37). This is to say, learning of difficult ideas as such cannot be rewarding, interesting, and pleasurable. Thus, in learning game design research, the researchers often tend to approach pedagogic design and game design as distinct areas, which have to be considered separately and situated in relation within the design models (see, for example, Kiili 2005; Tan, Ling & Ting 2007; Ibrahim & Jaafar 2009). The approach has proved to set problems, which can be summarize as follows: "If the development is left to educators, the resulting games may be neither fun, nor engaging; in contrast, if entertaining games designers dominate the design process, the games may fail to apply key pedagogical principles that are vital for effective learning" (Ibrahim & Jaafar 2009, p. 294). According to this view, the game design area is reserved to the creation of the fun-element, while the area of pedagogical design alone is responsible of learning design. This is controversial in the light of the fact that digital games have been discussed regarding the benefits digital games gain *as* learning environments (Becker 2005; Gee 2007).

The challenge of learning game design has been phrased as follows: "learning content of the game should be as appropriate as possible with intended learning outcomes in order to achieve learning goals. This somehow will offer more motivation to the student because of the different learning approach and it is fun because it is in a form of a game" (Ibrahim & Jaafar 2009, p. 297). As a result, from the above-presented citation it can be noticed how much conceptualization there evolves (a separation between learning content of the game, learning outcomes, and an externally set learning goal) from the division between pedagogical design and game design, without a clear explanation on why the game actually leads to enhanced learning. However, in the above-presented citation, it is recognized that there should be an interconnection between the learning objective and what the game playing is about (i.e., the learning content of the game).

Others have approached learning game design through a more medium-specific approach on digital games, and the learning objective has been proposed as a starting point for the design process. Kurt Squire (2006) explicates that "[c]onceptualizing domains through the medium of games means taking content and rethinking it in terms of designed experience, as represented through challenges, goals, and practices" (p. 25). The games, where the context is the game play, Squire (2006) calls as *endogenous games*. Squire's approach on games as designed experiences seems to be compatible with Gee's view on digital games as one kind of semiotic domains, which consist of internal and external design grammars.

Osterweil and Le (2010) introduce a design philosophy, which strongly rests on media-specific principles, according to which "[t]he medium of games is not [- -] an empty box into which content may be placed. Media structure the way we interact with content, and Marshall McLuhan's insistence that the 'medium is the message' points to how fundamentally media shape what can be said" (p. 64). Osterweil and Le (2010) agree with Gee's idea that game as a medium is capable of externalizing how human beings interact with real world information and prepare themselves for future actions by running through perceptual simulations. Furthermore, learning in game context manifests as a recursive cognitive loop, which contains both deductions and inductions:

> Players enter a game world whose operant rules remain hidden, which only become sensible to them as models based on data derived from exploratory actions taken in the environment. As players test the environment, they form hypotheses, which they further refine in their course of play. These models determine future actions that lead to affirmation or disaffirmation, which feed back into the cognitive model players build of the game world. (Osterweil & Le 2010 , p. 64)

Osterweil and Le (2010) note that the medium of games is pedagogically well-suited to procedural skill acquisition. They suggest that the learning game design process could be started out form the cognitive skills involved in the learning objective. From the game designers, this requires an in-depth consideration of the learning process pursued. *Find the play from learning through your own experience*, is the guideline proposed by Osterweil and Le (ibid.). By contrast,

Schaller (2011) proposes that learning game design process should start out by discovering few, most central rules, which are inherent to the subject matter involved in the learning objective, and which can be turned to game rules.

Phit-Huan Tan, Siew-Woei Ling, and Choo-Yee Ting (2007) consider the importance of determining the special characteristics of the target learner-players. Thereby, the learning game design process could be taken off with a pre-account, which covers the determination of the level of learners' cognitive development, taking into account their age, psychological needs, and learning behavior (types further specified in *Educational Psychology Theory and Practice*, by Slavin 1997).

Moreover, Kristian Kiili (2005) proposes a design model, which he calls Experiential Gaming Model, and where the focus is on design of learning game playing *experience*. As Kiili (2005) notes, the dominance of educational aspects has often caused a failure of a learning game design. Instead, when pursuing to design a meaningful learning game, a balance should be gained between the design dimensions of gameplay and educational goals (ibid.). In this context, I understand the educational goals to refer to the effects intended by the instructional designer, not to the learning objectives.

In order to optimize the playing experience as a learning experience, Kiili (2005) adopts the *flow*-model (Csikszentmihalyi & Csikszentmihalyi 1975), which represents the relationship between a challenge and a skill, and the area of flow exists between the areas of anxiety (high challenge, low skill) and boredom (low challenge, high skill), and posits Vygotsky's (1962) *zone of proximal development* into the upper limit of the flow area, where learner nearly experiences anxiety because of high pressure of the challenge. With respect to game design, this demands an inclusion of a hidden adaptivity -attribute in the game system. (Kiili 2005.)

In terms of game stories, Kiili (2005) states that stories in games integrate the game challenges to a larger context, which is a task or a problem. This can happen through a role the story offers the player. The more complex the game is, the more important is the role of the story for the player, but even a simple story can substantially engage and immerse the player in the process. Within this kind of problem solving situations, multiple problem solving strategies should be offered out for the player, i.e., the problem should be ill-structured. By this, Kiili (2005) means that there is "unclear goals and incomplete information relating to the problems" (p. 17). Interestingly, Kiili's suggestion, regarding unclear goals, differs from Malone's (1981) guideline, which recommends obvious or easily generated goals.

5 RESULTS

5.1 From Constitutive Model Establishment, via Interpretive Analyses, to Formulating a Design Model

In the year 2003, Aarseth (2003) stated that humanistic approach, in which an interpretative analysis method is applied to digital games, is not very established practice yet, and the best analysis methods are still sought by the researchers. The lack of sophisticated methods, as well as, unawareness with respect to their application, characterizes the situation of game studies of subsequent years, too (Montola 2012, Stenros 2015). Only recently, methodological overviews of digital game research have been published, for example *Game Research Methods* (edited by Lankoski & Björk 2015). In this section, I describe the overall structure and the forming principles of the research design of this study.

The starting point of the study was to set out with a broad approach on narrative and interdisciplinary narrative studies, whereas digital games were approached applying the classical game definition, suggested by Juul (2005), and with and aim to approach digital games through the lens of (soft type of) media-specific lens. Furthermore, the aim was to specify the narrative conception along the steps of the research, and finally, rather inductively and abductively than deductively, to construct well-defined concepts, models, and guidelines to enhance narrative learning game design. The expected benefit of this kind of process was, at root, to avoid too rigid definitions and narrow views regarding narrative during the early stage of the research process.

As the first objective of the study was to construct conceptual framing for the area of concern of the study – learning game narrative design – the research method employed resembles well theoretical developments, and hence, also field studies. Carl Magnus Olsson (2015) characterizes field study saying that in it the aim could be, for example, to adapt a theoretical framework originating outside the area of concern of the study to its particular context. On the other hand, Olsson (ibid.) continues that "[a] theoretical development contribution is similar to a field study in what it does, but theoretical development strives towards making

contributions that are *beyond* [the area of concern]" (p. 13, *my emphasis*). In both cases, the contribution of the study especially relates to conceptual framing.

According to Peter Lunenfeld (2003), design research comprises of three key modes: *research into design*, *research through design*, and *research for design*. The first-mentioned mode contains the historical and aesthetical studies of art and design, the second-mentioned mode denotes the project-based studies including materials research and development, and, the last-mentioned "is the hardest to characterize, as its purpose is to create objects and systems that display the results of the research and prove its worth" (Lunenfeld 2003, p. 11). While the primary aim of this study represents research for design, on the sub-area of game analyses, the mode is equivalent to the research into design.

During the early stage of the research design, the study was considered to represent characteristics of constructivist study in that the results of constructivist study can include *concepts*, *models*, *methods*, and *realizations* (Järvinen & Järvinen 2000). In terms of the results of constructivist study, the concepts denote the vocabulary of the theme for research, the models represent a set of propositions or clauses, which express the relationships between the concepts, the methods consist of a series of steps, by which the desired task is completed, and, the realizations denote practical implementation, which takes place in an environment (ibid.). The results of this study contain concepts (defining the constituents of narrative and the players' implied role as a recipient of game narrative) and two models of narrative, a constitutive one, and the design-oriented one. This meets the objective to construct conceptual framing for the area of concern.

The study proceeded through the following phases, though chronologically, the transition from the first part to the second part took place as a partial overlap:

- The first part
    - Concept-oriented analysis: Game designer's conceptions and definitions for 'Narrative'
        - Construction of the tentative narrative model
    - Literature review (I) on how the utilization of narrative to support player's learning is considered in learning game design - related research (with a special interest on how the concept of narrative is applied)?
    - Dialogical literature review (II) on narrative theory (focusing on the areas outlined by the tentative narrative model)
        - Specification of the elements and the composition of the narrative model on the grounds of the literature review (II)
- The second part
    - Cyclic testing phase:
        - Game analysis with an application of the narrative model
        - Complementary information searches (with respect to other than narrative theories),
        - Development of the model

    - Game analysis, application of the narrative model…
- Contrasting of the game analysis results got with the application of the last version of the narrative model
- Construction of guidelines

The first part of the study can be characterized as being concept-oriented, focusing on the concept of narrative, whereas the second part focused on further developing the narrative model relative to the needs of game design context, and testing the constructed model through a series of game analyses.

During the first part of the study, the target was to recognize the game designers' "needs" for the concept of narrative, emerging on the practical field. The aim was, besides, to determine the initial constituents for the narrative model. A concept-oriented analysis was conducted on the data, which consisted of a sample of game design guidebooks. The objective of the analysis was to fathom game designers' explicit or implicit conceptions of narrative - the basis that necessarily has an effect on game designers' narrative design work and on what opinions are recognized regarding narrative design. By approaching guidebooks as a data, it was presupposed that the researcher could attain the designers' views on narrative better than, for example, by interviews. Finally, basing on the results of the analysis, , through inductive and abductive reasoning, the objective was tentatively determine the most applicable narrative conception for digital game design context, so that, besides, the conception lends itself in psychological and educational contemplations, as well.

Additionally, research literature, considering learning game design and proposing a view on narrative utilization, was reviewed regarding the employed narrative definition or (as there often were no definition offered) the recognized narrative conception. The review headlines are discussed in the chapter 4.

After the concept-oriented guidebook-analysis, the first version of the narrative model, The Composite Model of Narrative Definition, was constructed. The tentative narrative model was further developed by conducting a dialogical literature review on narrative theories. The literature of the review was searched and selected according to the elementary elements of the tentative narrative model (such as narrative signified and signifier, cognitive narrative stimuli and its mental response). The second version of the narrative model was constructed on the grounds of the above-mentioned literature review, and the model was called Semiotic-Cognitive Model of Narrative. In this connection, the model was characterized as a *constitutive model*. Hence, for the Semiotic-Cognitive Model of Narrative the points of comparison within narrative theories are such as the narrative models proposed by Chatman (1980, p. 24) and Schmid (2007, p. 182, see also Pier 2003).

In the second part of the study, the fundamental idea behind the research design was as follows: *if the proposed concepts and models can serve as a framework or other kind of conceptual tools of an analysis, which is conducted on existing learning game narrative, then, the proposed concepts and models could be turned into conceptual tools of instructional game narrative design, as well*.

Thus, the development of the constitutive narrative model moved on as several attempts of analyzing existing learning games (more precisely, the narrative design decisions, as those appeared through game playing), and, as several attempts to modify the model. Additionally, during this phase of the study, several knowledge searches were conducted with a view to make informed decisions regarding the further development of the model. The knowledge searches were made, for example, regarding game rules, player agency, narrative learning support, game-based learning, digital games and narrative (especially the academic discussion, which took place mainly during the beginning of modern game studies), the elements of instructional design process, the specification of a learning objective, and, the design of intrinsically motivated learning.

Finally, it was a single insight, according to which a digital game can present intrinsic fantasy ('game fantasy' defined as according to Malone 1981), but, at the same time, somehow present an "extrinsic narrative", which indicated how the narrative model should be completed: the various possibilities of creating meaningful linkages between game rules and the narrative design areas should be specified more closely through the model.

5.2 Methods: Concept Oriented Qualitative Analysis, Interpretive Analysis, and Dialogue with Research Literature

Two kinds of analyses were conducted during this study: During the first part of the study, the concept-oriented analysis of game designers' conceptions and definitions of narrative was conducted, whereas a series of learning game analyses mainly comprised the second part of the study.

In the concept-oriented analysis conducted on the guidebook data, the method can be characterized as qualitative content analysis, which was theory-bound (also called abductive), in which case the researcher strives to explain and confirm the findings discovered from the data by existing theory (Tuomi & Sarajärvi 2002). The endeavor was to apply an approach as data-driven as possible, which is to say, the aim was to find the designers' conceptions and definitions as "the way they are". However, as researcher's observations always are theory-laden (Kuhn 2012), a framework representing a rough categorization of existing narrative theory lines, based on the researcher's view, was employed as a tentative coding frame. Besides, in this way, the theoretical roots, influences, or emphases of the designers' conceptions and definitions were identified.

The tentatively recognized designers' narrative conceptions were compared regarding to which extent the similarities can be drawn between various conceptions, and besides, to further specify the points at which they substantially differ. As a result, a list of 11 differing designers' conceptions on narrative was constructed from the data. Additionally, seven "blind spots", which are concepts applied ambiguously or with unsolved contradictions, were recognized (including the concepts of plot, setting, co-authorship, plot point, metas-

tory or metaplot, emergence, and linearity). The "blind spots" are not discussed in the context of primary results of the study. Instead, the "blind spots" guided the development of the concept of co-storyliner, relating to the results of RQ2.

The coding frame employed to the guidebook data included three categories: 1) Traditional Theories, 2) Classical Structuralist Theories, and 3) New Theories. The fourth category, the derivations of narrative conception basing on 4) Psychoanalytical theories, was inserted after the first attempt to code a sample of the data. Table 5 presents mutual differences of the categories regarding three characterizing questions concerning the focus, the constituent elements of narrative, and the meaning of 'plot'.

TABLE 5 The categories of the coding frame applied in the concept-oriented analysis of the guidebook data.

	Where is the focus?	What forms the concept of narrative?	What is meant by the concept of plot?
1) Traditional Theories	Some element of story content, e.g., events or characters	Pinpoints narrative in some particular element of content	Series of events
2)Classical Theories	(General) narrative structure that becomes concrete in the text on hand	Divides narrative into levels of content and expression (and discourse)	"Path" of expression, whereby the story's events are revealed
3)New Theories	The phenomenon of narrativity	Considers narrative, e.g., as operations where narrative stimuli cause mental narrative pictures in the receiver's mind	Varies according to the influence of the preceding narrative theory (Traditional or Classical)
4) Psychoanalytical theories	Story equals to experience	Narrative (mainly story) is considered as a mental tool reflecting on human self and his/her experience of reality	Draws closer to the determination of narratorial point of view

The analysis was conducted in two steps. In the first, organizing analysis step, the main ambition and focus areas of the guidebooks were determined. This was realized applying the data-driven analysis method, contemplating the information presented in the boards of the guidebooks, in the table of contents, and in the introduction sections of the guidebooks. As a result of the first analysis step, the research material was organized into three subgroups according to the main goal of the guidebooks, presented explicitly by the writers. The three subgroups comprised of 1) the guidebooks, which focus on guidance in general regarding game design work, 2) the guidebooks, which focus on guidance, especially with respect to game narrative or game story creation, and 3) the guidebooks which focus on guidance with narrative learning game design.

In the second analysis step, the guidebook material was read through for relevant parts – regarding the chapters in which one of the key words "narrative," "story,", or "storytelling" was mentioned – in order to recognize what

kinds of definitions of the key concepts are formed and utilized to instruct the reader on how to create game narratives or game stories. The conceptions and definitions can be outspoken (explicit), read between the lines (implicit), or both (if there was a conflict between the outspoken definition and the other discussion related to narrative). When the theoretical roots of the conceptions and definitions were pursued to be recognized, the central characteristics of the four categories of narrative theories (see Table 5) were utilized as a criterion.

The second part of the study consisted chiefly of the cyclic process of further developing the constitutive type of narrative model towards its design-oriented purpose. This took place in the shape of multiple attempts to conduct a learning game analysis on the *Testament* game. Hence, the *Testament* game analyses served as a pilot case, in which the applicability of the constructed narrative model was tentatively tested, and besides, the method of collecting observations was regularized. As the proposed narrative model was employed as the analysis framework, the method of the learning game analyses can be characterized deductive. Additionally, as a part of the preliminaries of the series of game analyses, if possible, the various explicitly mentioned learning objectives of the games were further specified applying Taxonomy Table (Anderson, Krathwohl & Bloom 2001).[7]

In the first attempts, the learning game analyses were oriented according to the following analysis question: *How narrative-related design decisions of the game are supporting player's learning during game playing*? As the development of the model came along, the analysis question sharpened in the following form: *Are the explicitly stated learning objective, the game narrative design, and the inherent learning goal of the game – achieved by the player while pursuing agency over the procedural theme of the game – corresponding and supporting each other?* Hence, in the game analyses, the focus was on the subject(s) of player's narrative and game rule related meaning negotiations during game playing. This contains subjects related to the game as an end product, and other subjects related to the game as a playing process or playing experience.

The most effective practical procedures for observing and taking notes *along with* game playing and *after* the playing sessions had to be regularized. It was challenging to find out a course of action, which would not disrupt the playing experience, but at the same time, would ensure the recording of essential observations before they are forgotten. What seems to be irrelevant or trivial at one point of game playing (for example, during a rapid phase of game playing), may seem to be more significant later. However, it was essential to form a regular procedure for taking notes during game playing, as the analyst's ponderings on the significance of the observations during game playing distances her from the authentic playing experience.

The analyzed games, or certain predetermined areas of the games, were played through by the analyst multiple times. The game elements and the game playing experiences were documented by multiple ways. Lots of screenshots were taken during all playing sessions.

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7 However, the explicitly mentioned learning objective of *Testament* proved to be too ambiguous in order to be determined specifically enough.

During the first play-through(s), general notes were put down. The notes considered the story headlines, the most essential audio-visual means of expression employed, and formal game elements, including the central game components, goals and actions available to the player. Additionally, diary-type of short notes described the subjects and ponderings related to various surmises, hypotheses, confusions, or misunderstandings, encountered when playing the game first time. Hence, the diary-type of writing might account for why and how the notes of formal game elements were occasionally partially re-written, specified, or expanded. In practice, the diary-type of notes were written shortly on the run during game playing, and completed (if needed) afterwards.

In pursuance of the following play-throughs, the notes regarding the formal elements were completed regarding details on elements and rules, which had relation to the narrative side of the game. The emphasis of taking notes moved more into writing personal playing diary, were the focus was on the analyst's questions, subjects of ponderings and reasoning during game playing. Also in pursuance of the latter play-throughs, the short notes were taken on the run alongside the game playing, whereas slightly longer notes were written during temporary playing breaks. Immediately after the playing sessions, more elaborate descriptions were written on the grounds of short notes and screenshots. Especially the game narrative-related impressions, suppositions and reasoning's were specified carefully in the playing diaries. This kind of writing process made it possible to, first, note down the authentic thoughts, then, by degrees, to step back, reflect the thoughts against the analysis frame, and finally, to situate the observations within the DSIGN model.

5.3 Research Material: In Search of Conceptions and Compositions

Two sets of research material were investigated in this study. The first material consisted of nine game design guidebooks, whereas the second one comprised four learning games.

The game design guidebook material was selected during the last part of the year 2008. The criterion according to which the literature was included to the material included the following points:

1) the writer/-s discuss computer game design
2) the author/-s are enthroned as experts of computer game design
3) the digital game design guidebooks, which do not consider narrative design at all, are excluded from the material
4) the guidebooks must have been published within the last 10 years

The aim of analyzing present-day guidebooks resulted as the fourth criterion. Additionally, the overall scope of the publication could cover other kinds of products, as well, if the publications contained relevant digital game design -related discussions. Hence, the selected data included two interactive storytelling guidebooks. Given the abundance of the supply of game design guidebooks, nine books constitute a sample, which is just a drop in the bucket. The number of the

selected books was striven to keep to a minimum by excluding after a tentative preview the books, which represented very similar approaches to narrative. Finally, the game design guidebook data consisted of the following books:

- McCarthy, D. Curran, S. & Byron, S. (2005) *The complete guide to Game Development, Art & Design*. East Sussex, UK: The Ilex Press Limited.
- Rollings, A. & Morris, D. (2003) *Game architecture and design. A New Edition.* Boston: New Riders.
- Vuorela (2007) *Pelintekijän käsikirja*. Helsinki: BTJ.
- Bateman, C. (ed.)(2007) *Game writing: narrative skills for videogames*. Boston, Mass: Charles River Media.
- Chandler, R. (2007) *Game Writing Handbook*. Boston, Massachusetts: Charles River Media.
- Crawford, C. (2005) *Chris Crawford on Interactive Storytelling*. Berkeley, CA: New Riders.
- Glassner, A. (2004) *Interactive Storytelling. Techniques for 21st Century Fiction*. Natic, MA: AK Peters, Limited.
- Krawczyk & Novak (2006) *Game development essentials: Game story and character development*. Clifton Park, NY: Thompson Delmar Learning.
- Iuppa, N. & Borst, T. (2007) *Story and Simulations for Serious Games*. Boston: Elsevier.

In the learning game data, four learning games were selected. The selection criterion included that, firstly, there exist some kind of explicitly told learning objective attached to the game (mentioned e.g., on the homepage of the game), and secondly, the games explicitly represent story contents (i.e. the story components). If the game had been acknowledged by an award, that was in favor of its selection, but awards were not a requirement of selection.[8] It was ensured that the learning game -material includes games that are esteemed as representatives of different story-oriented game genres, especially various types of role playing games (from now on referred as RPG) and adventure games. This was executed by exploring various sources of information (specifically the home pages of the games and other sites and materials, which introduce learning games, often targeted at parents and teachers) and by short tentative playing trials from the beginning of the games. The sample of learning games, which constitute the second set of research material, is listed in the Table 6. Additionally, I have listed the explicitly told learning objectives of the games, and the game genre, as recognized by several general resources (including the home page of the game, and the Wikipedia page of the game).

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8 In the end, all the cases included to the research material are award-winning learning games. *Testament* won the Serious Game –category in Swedish Game Avards 2010 (see more from http://2010.gameawards.se/news/winners/). *Global Conflicts* game series has won numerous awards, for example the Bett award in 2010 in the class of "secondary, further education and skills digital content" (see more from http://www.theguardian.com/resource/winners-and-finalists) *Mission US: A Cheyenne Odyssey* won in 2014 the Games for Change Award in the class of "Most Significant Impact" (see more from http://www.gamesforchange.org/2014/03/2014-games-for-change-award-nominees/). Besides, in 2014, *School of Dragon* has won the Appy Awards in the category of "Branded Gaming App".

TABLE 6 The learning game data summed up.

Game title	Learning objectives	Game genre
Testament. Immersive Learning (2010).	To familiarize young people about the central thread of the stories of *the Old Testament*.	Action role playing game
Global Conflicts: Latin America. "El Patron"[9] Serious Games Interactive (2008).	To enhance students' understanding on historical knowledge, and phenomena of social sciences, such as international affairs, corruption, and social inequity. To develop student's ability to successfully apply interview skills and principles. To enhance student's ability to use history-related knowledge and understanding in order to explain the present situation.	Adventure game
Mission US: A Cheyenne Odyssey. Thirteen Productions LLC (2015).	To enhancing students' understanding on historical knowledge. To developing student's historical empathy. To enhance student's ability to use history-related knowledge to understand present-day values.	RPG
School of Dragon. [10] JumpStart (2013).	To enhance students' understanding on subjects of sciences, such as motion and forces (physical science), ecosystem (life science), and water system (earth science). To enhance students' ability to apply the scientific method and conduct scientific experiments. To encourage children to examine things, pose questions, and learn to enjoy the learning itself.	Massively multiplayer online role playing game

In the study, the focus is on single player games and single player gaming. However, School of Dragon is a multiplayer game, but offers the single player mode, as well. In this case, the inspection was limited on the single player mode.

9 The inspection is limited on the mentioned sub-section of the game

10 The analysis on School of Dragon was conducted during the spring 2015, starting from the beginning of the game till the stage, where all the game fields existing at that time, and mentioned in the introduction page (http://www.schoolofdragons.com/how-to-train-your-dragon/game-guide/welcome-to-the-school-of-dragons), are get to know, excluding the "Band together with other Vikings" point.

Currently, the previously permanent web pages of Global Conflicts game series have been permanently removed, and the game series is no longer supported. The other games can be loaded from the following home pages: http://testamentgame.bibelsallskapet.se, http://www.mission-us.org, and http://www.schoolofdragons.com .

5.4 RQ1: The Narrative Conception Adopted

The RQ1: *What kind of narrative definition and conception should be adopted, so that it best lends itself on applying narrative learning approaches and recognizing the novel types of narrative encountered within the digital game context?*

The answer in a nutshell:

- A semiotic-cognitive narrative conception
- Narrative defined as a process as well as an end-product
    - Narrative process taking place through an interplay between four design areas, called
        - Material Representation and Multimodal Discourse,
        - Response to Narrative Stimuli,
        - Story Components,
        - Layers of functional system, i.e., Story as a Complex System of Facts
    - Narrative as capable of employing several semiotic systems, as well as, the semiotic layer of its own
    - Narrative as capable of functioning as a powerful cognitive artifact

Digital narrative learning game design can be seen as a combination of digital narrative design, digital game design, and learning tool or material design. Hence, the theoretical ground behind more concrete design decisions requires such a comprehensive conception of narrative, which is applicable on the digital game context, as well as, on the psychological theory context selected as a starting point for determining how to enhance the conditions of learning.

The Semiotic-Cognitive Model of Narrative was constructed to distill the relevant results regarding the RQ1 (Article 2). The model does not represent a completely new definition for narrative, but proportions several existing definitions on narrative. That is why I have called the model a constitutive model. The aim with the model was to capture separate constituent areas of narrative, relevant for game narrative designer's considerations during digital learning game design.

The result to the RQ1 is an outcome constructed using several methods: Firstly, the results gained from the concept-oriented analysis on game design guidebooks further utilized. In this phase, the relevant elements of suitable narrative conception were recognized. Secondly, a literature review on narrative theories was conducted using the before-mentioned relevant elements of narrative as the determinators of the scope.

Basing on the results of the analysis conducted on game design guidebooks, it was recognized, that the game designers' "needs" for the concept of narrative include elements studied within the semiotic and the cognitive theory lines of narrative studies (Article 1). More precisely, narrative is often recognized by game designers as a communicative artifact, being useful to divide on the areas of content and expression, or, signified and signifier. Furthermore in the context of game design, narrative appears as a phenomenon fundamentally resting on the relationship between cognitive stimulus and its human mental response. As the study proceeded, the tentative version of the narrative model (proposed in Article 1) was replaced with the developed version of the model, named The Semiotic-Cognitive Model of Narrative (Article 2, see Table 7). Also this version of the model was constructed applying the cognitive and the semiotic elements, but in this connection, the separated four areas of the model were further specified, and the proportioning of the elements was corrected on the strength of applicable narrative theories. Furthermore, at this point it was possible to take a closer look at the multilayered cognitive-semiotic meaning producing mechanisms of narrative. (Article 2.)

TABLE 7 The Semiotic-Cognitive Model of Narrative.

	SIGNIFIED	SIGNIFIER
SUB-STANCE	The Story Components • World, objects, character(s), events, goals, challenges on the level of fictional reality • The emotional reality • The relationships between story components (the static elements) • Procedural knowledge • Can include also another story of the act of narration (narrator as a character)	Response to Narrative Stimuli • mental images, (further defined by Ryan 2005, 347) • the mental images turned into *racontants* • Witnessing
FORM	A Story as a Complex System of Facts •Story as a mental model • Story schema •'The told', *raconté*	Material Representation and Multimodal Discourse •The multimodal discourse of a game, requiring both interpretative and constructive participation from the player • Contains procedural means of expression • Operate as narrative stimuli

The model presents narrative design areas through a chart, by which narrative is divided into, on the one hand, 'signified' and 'signifier', and on the other hand, into 'substance' and 'form'. The same kind of chart, just filled out differently, has been previously applied also by Chatman (1980). The quadripartite composition is adopted from theoretical linguistics, originating from Saussure's and Hjelmslev's works.

According to the Semiotic-Cognitive Model of Narrative (Table 7), the mental pictures of the story components and the mental representations regarding the narrational situation, i.e. the "witnessing", are recognized as *the substance of narrative signifier*. These mental representations are, then, filtered or selected, and manifested by means of material representation and multimodal discourse, which is *the form of narrative signifier*. The story components consist of the fictional world, character(s), objects, events, goals, challenges, and the characters' emotional reality. These elements of the fictional reality constitute *the substance of narrative signified*. In narratives, the story components are enforced through more or less recognizable, culturally shared role- and event structures, which are determined from the character's or event's position and significance in the entirety of the narrative. This is *the form of narrative signified*, and it plays central role in the process where the second stage meanings of a narrative are interpreted. (Article 2.)

All the four areas of the proposed narrative model are considered as *design areas*. In practice, a designer can work the material and the perceptual side of narrative (the form of narrative signifier) more directly, and besides, he may utilize the canonical structures of narratives (the form of narrative signified) from more tool-like perspective. The designer must consider the design of fictional reality and events, and the player's expected mental pictures (the narrative substances) indirectly through the narrative forms. The design of the latest, the player's expected mental pictures, may include an additional objective of causing associations to particular piece of player's (assumed) previous knowledge. (Aticle 2.)

Particular narrative-related approaches, theories and ideas had especially central role when giving reasons for the Semiotic-Cognitive Model of Narrative and its composition. Ryan's (2004a, 2005a) definition includes that, in case of *being narrative*, the recipient's (reader's, viewer's etc.) cognitive responses have to constitute the mental images of the story components: the fictional world, characters, objects, events, goals, challenges, emotions, and relationships between these elements. However, Ryan locates the mental pictures of narrative on the signified-side of narrative.

The view on mental pictures as a part of narrative signifier was supported by Bremond's approach on the second stage semantics of narrative. According to Bremond (Pier 2003) "'[t]he raconté [the told] has its own signifiers, its racontants: these are not words, images or gestures, but the events, situations and behaviors signified by these words, these images, these gestures'" (p. 78). During the narrative process of meaning making, the story constituents (events, situations, and behaviors) turn to act as *narrative signifiers* (i.e., *racontants*), and

the told (*raconté*) turns to act as *narrative signified* (Pier 2003). Thus, when constructing the Semiotic-Cognitive Model of Narrative, *racontants* were recognized equivalent to the mental images of narrative constituents, and were situated on the signifier-side (Article 2).

Finally, according to the proposed view, narrative meanings, or narrative messages, are constructed through continual dynamic interplay between the areas specified in the narrative model. The composition of the model stresses especially the multilayered meanings of narratives: if stories, which are consisted of the components (the characters, events etc.), would already cover the essential meaning and import of narrative for a human being, then narratives could be received as lists as well. But as the structure of the entirety, and the very act of telling something in that particular way within the context of a given narrative is part of narrative message, the overall narrative meaning is multilayered. Besides, narrative meanings are founded on multilayered semiotics, too – one being responsible for the denotative meanings, another employing denotative meanings on the purposes of the second stage meanings.

However, the interplay between the narrative areas requires an agent, a human being that receives, consumes, and enjoys narratives, and more or less consciously utilizes those as cognitive artifacts. When designing digital game narrative, the designer must apply his view on player's hypothesized position in a game narrative. The player's abstract agent and position- related conception in digital game narrative will be discussed in the next section.

5.5 RQ2: The Role and Tasks of the Player in Game Narrative

The RQ2: *How the player's role in game narrative can be characterized?*

The answer in a nutshell:

- In terms of narrative communication, a player's position can be conseptualized as a co-storyliner, whose meaning negotiations take place in relation to player's pursuance of agency over the game narrative.
- Regarding to the narrative process, the co-storyliner may be positioned by multiple ways, from internally involved to more or less externally involved
- The various positions imply activities of differing quality, such as acting in a role, making selections in, or governing the events of the story world, and generating narration of a particular type.

Digital games, which employ narrative, always include, besides, the game rule apparatus. The two tendencies, the narrative and game ones, may appear more or less merged and set more or less meaningful contradictions. The involvement of co-storyliner, which in narrative games simultaneously is that of a player, is strongly functional and purpose oriented, instead of being just interpretive. Hence, the composition of narrative communication process, characteristic specifically for digital games, has to be viewed from a novel viewpoint.

The player's activities in digital game narrative are closely related to the pursuance of agency over the game system – agency defined as by Wardrip-Fruin (2009). Thereby, the player's role and position as a co-storyliner in different games proceeds from the game rule design of that game – game rules defined as by Ang's (2006). As Tanenbaum and Tanenbaum (2009) describe, when pursuing agency in a narrative digital game, player's efforts take improvisational and dialogue-like form. Through the dialogical process, the player constructs intents, which require determination of goals and plans. This, for its part, encompasses that the player conducts meaning negotiations with relation to the opportunities of having influence on the fictional world and events occurring within it, the story structure, or the means of expression revealing the story. Furthermore, the co-storyliner's meaning negotiations cover continual metacognitive reflections on the appropriateness of player's mental pictures, expectation and biases concerning the story contents. These meaning negotiations result as intents, which, for their part, result as player activities. This is how player's activity takes place through commitment to meanings.

During the study at hand, correspondence between player's pursuance of agency and constructive learning was recognized: "Just like constructive learning process requires learners to actively engage in the constructing of meanings via various activities, agency in games includes the player's goals, plans and intentions, which [- -] take the player through experimentation and feedback, from their initial assumptions to an understanding of the procedural subject" (Article 3, p. 632). Furthermore, it was assumed that in narrative games, the design decisions governing the co-storyliner's meaning negotiations play central role from the instructional design viewpoint.

If players aim to success, find out the intrinsic ludus rules of a game and win the game, they conduct experiments within the limits of symbolic paidea rules and reasons on the strength of the feedback gained through semantic paidea rules. Using Gee's (2007) terms, players create situated meanings on the semiotic domain of the game and increase their knowledge on the related internal design grammars. When game narrative and game rules intersect, those are points, in which the semiotic domain of digital game can be harnessed to highlight selected contents from another semiotic domain considered with means of narrative and highlighted according to internal design grammar of the game.

From the basis of the game design guidebook analysis, the player's role regarding game narrative was tentatively defined and delimited with a concept of "co-storyliner" (Article 1). The co-prefix refers to the dialogical nature of the player activity, in agreement with Tanenbaum and Tanenbaum's (2009) definition of agency. The dialogical relationship between a game designer and a player should particularly be an object of instructional game designer's interest.

When applying both Wardrip-Fruin's (2009) and Tanenbaum and Tanenbaum's (2009) views on agency, it seems that player has to both *discover* and *construct* agency: To discover within the limits of unambiguous rule-system, to construct within the limits of ambiguous narrative. Evidently, furthermore, it is possible that players *construct* such intrinsic ludus rules (rules regarding how to

play more succesfullly), which are not intended by the original designer of a game. If not a mere coincidence, this phenomenon should be seen as especially high level critical learning of an experienced player (Gee 2007), but this is true specifically with respect to the semiotic domain of the game and does not necessarily hold good for the other semiotic domains carried with narrative.

When constructing the term "co-storyliner", 'storyline' was selected to serve as a root instead of the concept of 'plot'. This was because the huge amounts of theories constructed for 'plot', which starts from Aristotle's *Poetics*, and includes the diversity of plot-definitions and inconsistencies of translations between various plot-related narrative theories. Furthermore, 'storyline' would not especially highlight the initial invention of the subject of a story (Schmid's Geschehen), or, the initial selection of the narrational techniques, by which the path of narration through the story events is created. Typically in digital games, as in various RPGs, platformers, or in adventure games, the above-mentioned narrative-related selections are designer's duty.

In accordance with the structuralist plot definition, as a co-storyliner the player can have an influence on the way that the story is being told within the limits of the design. During this process, the player carries out selection and ordering processes by which the narration of the story is formed in the end. Furthermore, the selections may concern the story components within the repertoire defined by the designer. Player may be able to include, exclude or put together, for example, characters or objects, in accordance to the options created by the designer. Moreover, the player may conduct meaning negotiations with respect to the significance of a character, an object, or a setting for the game narrative. If this kind of meaning construction process is intended to be part of the game playing (i.e. is connected to game rules) the player may be able to try out various roles or relevancies for the player-character (PC), NPCs, objects, or settings. It is through such enabling repertoires that designer creates so called potential-based game narratives.

Besides, the term 'storyline' may refer to sub-threads of a story, for example, various versions narrated by separate characters. As proposed by Friedlander (2010), the separation between micro and macro narratives may be useful, especially when designing learning games, which consider wide ranging cultural learning topics.

The more the designer creates connections between narrative areas and game rules, the broader is the agency-based latitude the designer offers the player over game narrative. This is to say, the more narrative-related meaning negotiations are, if not required, at least, opened up for the player, and, the more spread out may be the player's observations.

The roots of the proposed concept, the co-storyliner, are discussed in Article 1. Raine Koskimaa's (2000) "*co-narrator*" defines the role of the reader of hypertext fiction, but this concept cannot be adopted as such in the context of digital games, because in games necessarily there is not a clear narrator-agent. Furthermore, Aarseth's (1997) concept of "*intriguee*" relates to text-adventure games, and characterizes the player in a role, where she is forced to solve the

puzzles in order to proceed in the game. Intriguee's tasks, thus, may be situated in some story related role, or the tasks can be fully external regarding narrative.

With the term 'co-storyliner' I pursue to cover player's potential narrative-related tasks and roles. This includes the roles of a story character, a narrator, or – in accordance with Rimmon-Kenan's (2006) suggestion regarding broadened narratorial position – a kind of screenwriter or director, who controls the story components, and perhaps also narration-related selections from a longer distance. In Ryan's (2006) terms the last mentioned would represent *external player involvement*. Various narrative-related roles offer playing experiences of different kinds. For example, in the role of a character, the player emphasizes the player-character, according to its attributes and situation in the presented fictional reality, and, perhaps, ponders the alternate courses of action in the given situation. In the role of a narrator, the player may manipulate such dimensions in games, which relate to, for example, Genette's (1983) notions of mood (e.g., selection between the first and the third person of audio-visual narration), voice (e.g., selection of PC), and tense (e.g., selection of skipping a cut scene or re-entering given story event) . In director's more alienated, god-like role the player may settle down to more global problems of the fictional world, or, the narrative character of human experiences and understandings of events.

In the list below, examples of player's tasks as a co-storyliner, as well as, possible objects of meaning negotiations related to the four areas of the Semiotic-Cognitive Model of Narrative are described:

- **The Story Components:** Co-storyliner cognitively organizes the story events in chronological order (similar to Schmid's (2007) *Geschichte*), and keeps an eye on the internal logic of the story. To raise player's plausibility and engagement, during the meaning negotiations, the story must be recognized to be faithful to itself.
- **Response to Narrative Stimuli:** Co-storyliner searches relevant knowledge from her personal life experience in order to complete the gaps of narration and anticipate the forthcoming events through her existing knowledge.
- **A Story as a Complex System of Facts:** Co-storyliner judges the story components relative to their significance for the overall course of events. During the narrative process, co-storyliner interprets and re-interprets the story components along the way, and finally, *within* the frame composed of and between the beginning and the ending.
- **Material Representation and Multimodal Discourse:** Co-storyliner must apply relevant multimodal literacy skills in the game context in question. Co-storyliner may be able to speculate how modification of, for example, visual style, camera angle, or lighting (correspond to Schmid's (ibid.) *Präsentation der Erzählung*) may impact on the playing experience, and even on the course of events, changing thereby also the actualized story

contents. Over multiple play-throughs, co-storyliner may be able to speculate, how particular solutions that organize the happenings through linearization and permutation of segments in a synthetic composition have an effect on some parts, or on the entire game narrative (in this respect the object of speculation resemblances Schmid's (ibid.) *Erzählung*).

With the list above, the aim is to exemplify how a digital game can provide the player diverse narrative-related tasks of various quality and degree of difficulty.

5.6 RQ3: How to Design Learning Support through Game Narrative

The RQ3: *What guidelines for digital learning game narrative design can be suggested so that player's learning during game playing is supported as comprehensively as possible?*

The answer in a nutshell:

- Learning motivation during game playing arises out from the player's assumed pursuance of agency
  - Agency involves both discovered and constructed understanding
  - Process that leads to this understanding cannot be detached from agency itself.
- Learning objective should be specified as cognitive processes, which can be designed as co-storyliner's tasks or activities
- Game narrative and game rules constitute 16 different intersection points, in which the co-storyliner's meaning negotiations and ponderings can focused on, and which are represented in the DSIGN model.

Playing, as well as learning, can be seen as target-oriented activities. Besides, in traditional narratives at least the main character has some kind of more or less clear goal. Additionally, attached to various modes of narration, there is the intention to tell about something, which itself is absent, and the recipient's implicated intention to grasp the meanings of narrative. Regarding the purposes of learning game design, the following communicative intention-related agent-pairs can be distinguished:

- learner – instructor
- player – designer
- co-storyliner – implied designer
- (narratee – narrator)
- character – character

When trying to improve learner's intrinsic motivation and transferability of knowledge, Malone (1981) clearly pointed to the advantages of intrinsic fan-

tasy. However, a digital game can present intrinsic game fantasy, i.e., there clearly is a relation between game fantasy and player activities, but have a game narrative partially in extrinsic position. (Article 4.) If game narrative is aimed to be meaningfully tied to the player's pursuance of agency, then narrative should be set with consideration to "intrinsic position" in a game.

For example, the manifold Dungeons and Dragons -based RPGs, where even the most central characters, settings, objects, and actually the whole fictional world, are easily convertible. The story context changes, but the basic system of game rules remains the same. It is one thing to highlight similarities between several stories by applying particular game genre conventions to them, and another thing to employ game rule design to highlight the particularities of a certain story – and thereby to produce an interpretation of the second stage meanings of the original story. (Article 4.)

With the Semiotic-Cognitive Model of Narrative, I have strived to capture and specify the areas of narrative design, essential regarding instructional game design. This is to say, the separated areas can be harnessed to serve as links between game rules and the learning objective. Furthermore, another model was constructed by setting the design areas of narrative and the game rule types proposed by Ang (2006) to intersect each other. The model is named the Design Space for Instructional Game Narrative (introduced in Article 3), i.e. the DSIGN model (see Table 8). With the DSIGN model, the learning game designer is able to contemplate the options of directing the learner-player's hypothesized meaning negotiations.

TABLE 8 The DSIGN model, originally presented in Article 3.

The Area of Semiotic-Cognitive Model of Narrative/ Ang's rule type	**Extrinsic Ludus Rules**	**Intrinsic Ludus Rules**	**Symbolic Paidea Rules**	**Semantic Paidea Rules**
The Story Components (signified)				
Complex System of Facts (signified)				
Response to Narrative Stimuli (signifier)				
Material Representation and Multimodal Discourse (signifier)				

In order to appropriately form the co-storyliner's position, it is essential that the learning objective is properly specified at first (Article 4). This can be done, for example, by applying the Taxonomy Table (Anderson, Krathwohl & Bloom 2001). The application of the Taxonomy Table enables the designer to further define the learning objective-related knowledge- and cognitive process types. This, in turn, can help the designer to tentatively formulate relevant co-storyliner's activities. Besides, it is notably important to recognize in the early stage of the design process, if the learning objective is especially related on a particular design area of narrative. Moreover, there are topics, whose teaching through narrative could be sometimes misleading (for instance, personifying in the context of biological adaptation process), and this aspect should be considered in the early stage of learning game design. (Article 4.)

When working at various design areas of game narrative, design questions of different kinds come up. For example, the design decisions relevant to *Material Representation and Multimodal Discourse* relate to permutation of narrative events, or at least, determining the events to be permuted by the player during game playing. Besides, the designer's tasks include the linearization of simultaneous events and setting the pace of the narration. In digital games, the linearization often results in several alternate threads of narration. Additionally, game narrative design sets plenty of other questions regarding the selection of expressional techniques. The design area of *A Story as a Complex System of Facts* calls on the designer to be aware of what kind of socio-cultural background information and literacy skills (various media literacies, canonical stories, genre conventions, etc.) he expects from the player. (Article 3.)

Within the semiotic-cognitive framework, the two design areas, *Material Representation and Multimodal Discourse* and *A Story as a Complex System of Facts,* are considered to constitute the form of a narrative. Thus, the design questions regarding these areas represent an instrumental approach on narrative. In turn, the design questions related to *The Story Components* and *Response to Narrative Stimuli* are more about inventing issues: inventing the fictional realities, characters, events, and inventing personally meaningful mental pictures and impressions.

However, when applying existing instructional design theories, such like Malone's framework, the designer may take also the story components and the recipients' mental responses more instrumentally. In game narratives, especially the design area of *The Story Components*, "the story-related goals, plans, and emotions of characters constitute a special case, which can build a bridge between narrative and purely game-related meanings. This is because it offers an area where the player's game-related goals, plans, and emotions can meet those of a player character (PC)—or construct some thought-provoking contrasts for the co-storyliner's meaning negotiations"(Article 2). The area of *Response to Narrative Stimuli*, in turn, offers an important design area regarding the application of instructional design guidelines concerning learner's expectations and activation of learners' previous knowledge, as suggested, for example, in Malone's (1981) framework for a theory of intrinsically motivating instruction (Article 4).

The cells of the DSIGN model represent the differing subjects of ponderings and objects of meaning negotiations players must conduct during narrative game playing (Article 3). With Table 9, the aim is to characterize and demonstrate the mutual differences of the separate areas of the DSIGN model through respective exemplifying design questions. Asterisks around the word this (*this*) denotes that a selected perceivable detail of a game could be referred in place of the word.

TABLE 9 The DSIGN model with exemplifying design questions.

	Extrinsic Ludus Rules	**Intrinsic Ludus Rules**	**Symbolic Paidea Rules**	**Semantic Paidea Rules**
The Story Components (signified)	What the player as a fictional character should aim to do?	What is the mode like, which should be adopted in order to successfully move on in the game, while being empathized in the PC's role?	What the player's scope of action provides/contains regarding her role in the story?	What are the consequences of the player actions for the objects and characters of the story world, including the player character (PC)? The consequences on *a narrator-PC* may touch the narratorial perspective, and the PC's motivation to act, and thereby, give reasons on changes on symbolic paidea rules.
Complex System of Facts (signified)	Regarding the fictional events, what kind is the player's involve-ment type that the player must adopt in order to play the game? (the internal and the external types as the extremes of a continuum)	How the player must deal with the story events and other components in order to successfully play the game.	How the player can govern the story events?	How the player's choices impact on the totality of the story structure and plotting of the narration?
Response to Narrative Stimuli (signifier)	What kind are the player's expected mental pictures, expectations and conceptions regarding the main goal of the game (at a given time – as this should be seen as a subject of change)?	What kind are the player's expected story-related mental pictures, expectations and situated plans of particular actions leading to success (at a given time – as this should be seen as a subject of change)?	What kind are the player's expected mental pictures, expectations and assumptions on what she is capable to do in the game story (at a given time – as this should be seen as a subject of change)?	What kind are the player's expected mental pictures, expectations and interpretations regarding the reactions of the virtual world (at a given time – as this should be seen as a subject of change)?
Material Represen-tation and Multi-modal Discourse (signifier)	Is *this* representing the main goal of the game? (How the main goal is expressed in the game context?)	Is the usefulness and effectiveness of a particular action contextual for the story events and the story environment, and not only for the abstract game context?	Is *this* element of the representation a savor of a chance to interact?	How the narrative-related causalities of the virtual environment are expressed.

Through the design decisions that govern the separate narrative areas and link game rules on the areas, the designer sets various prerequisites for the player, for example, regarding basic media literacy skills (on the area of Material Representation and Multimodal Discourse), narrative competence (on the area of Response to Narrative Stimuli) narrative-related literacy specialties (on the area of Complex System of Facts), and expected cultural, historical or social foreknowledge, along with the mainly script-based knowledge basing on one's own personal life experience (on the areas of the Story Components and Response to Narrative Stimuli). However, when the abovementioned knowledge and skills unite in a narrative context, those can function as learning supports or scaffolds in various ways, for example, in respect of motivation and orienting to learn, activating existing knowledge, connecting new knowledge to existing knowledge, applying narrative methods of problem solving, getting an empathy- and experience-based understanding, and besides, conveying tacit knowledge and sustaining tacit instruction.

As an umbrella term, constructivist learning approach leaves room for the application of several sub-approaches within it. In respect of learning experience, the designer's approach to learning especially governs the design decisions in the cell 1. The designer's approach to learning determines the foundations for the pedagogical script, which the designer creates through symbolic and semantic paidea rules of the game. (Article 3.) Furthermore, what should define the design decisions determining the player's involvement type (the cell 5) depends, at least, on what is the role of empathy in the learning approach applied, and besides, on the characteristics of the learning objection, especially the cognitive processes subsumed. (Article 3 and Article 4.)

When approaching constructivist learning through player's agency (as in Article 3 and Article 4), the emerging essential points, and links between the two, are, firstly, subjects cannot be directly revealed 'as they are', and secondly, learning cannot be enforced. The guiding principle for learning game narrative design is to create emotionally and cognitively beneficial circumstances for constructing personally meaningful understandings of the learning objective -related type of knowledge, and to support player's motivation in respect of learning objective -related cognitive processes, for example, by offering not-too-easy-and-not-too-hard challenges (i.e., by supporting the flow of activities). These are, of course, just two sides of the same coin, which is to say, a learning objective is a combination of knowledge type(s) and cognitive process(es), and, the emotionally and cognitively beneficial circumstances of learning are involved, besides, in the attempt of supporting learning motivation. In narrative digital games, at root, player's motivation to play arises out from the player's *assumed pursuance* of half discovery, half construction -based agency, which, for its part, rests on player's *freedom to choose* between to play, or not to play. Finally, the suggested view rests on Polkinghorne's assumption that meanings only exist as activity. Hence, the process, which leads to the understanding and mastery being united in sought-after agency, actually cannot be detached from agency itself.

When establishing narrative learning support in a digital game, the learner's desired cognitive activities and processes should be designed in the game by establishing the co-storyliner's position. If situated in this way, the learning objective driven cognitive activities of a learner will be involved in the player's improvisational and dialogic experimentations of constructing game narrative-related meanings and further interpretations. Besides, the desired cognitive activities are connected to the playing process itself, and finally also to the intrinsic ludus rules of the game. Actually, the whole idea of play and narrative - based learning especially foregrounds, how the metacognitive type of knowledge is interlocked with learning of other knowledge types, the activities of critical learning process itself, and the mere enjoyment of the process.

When approaching learning game narrative design from the viewpoint of the co-storyliner's meaning negotiations, it is possible to recognize, and instructionally take into account, aspects such as gaming style. In other words, the player's enjoyment is not only about playing a game through and winning, but about playing the game in an individual style and according to one's own preferences, by, for instance, repeating certain episodes for the pure pleasure of it, slowing down or speeding the action at will, and assuming a role as a protagonist or as a bystander. By taking into consideration the players' differing learning styles, the designer can further strive to respond the learner's emotional and cognitive needs, as advised by Malone (Article 4).

5.7 Articles

The Article 1 introduces the findings of the concept-oriented analysis conducted on the data, which consisted of a sample of game design guidebooks. Within this article, there is, besides, the discussion on what appear to be the most applicable approaches and conceptions on narrative with respect to the prospective model establishment. The Article 2 focuses on narrative theories. In this article, the narrative theoretical background is described, and it is explained, how the selected semiotic and cognitive theories are consolidated into the Semiotic-Cognitive Model of Narrative Constitution.

The Article 3 describes the DSIGN model, which was formed by joining together the Semiotic-Cognitive Model of Narrative Constitution, and Ang's (2006) typology of digital game rules. The ability of the DSIGN model to structure a specification of distinguishable subjects of various narrative digital games was tested by applying the model as a framework for a series of learning game narrative analyses. In Article 3, the 16 areas of the DSIGN model are described by offering relevant excerpts from the game analyses. Basing on the strength of the samples of analysis contemplated in parallel, the 16 areas of the DSIGN model are, besides, tentatively further described as objects of instructional design.

The Article 4 focuses on a single learning game narrative analysis conducted applying the DSIGN model as a framework. The article describes how

the areas of problematic design decisions can be pinpointed more closely by comparing the findings of DSIGN-based learning game analysis to the external learning objective of the game. Furthermore, basing on the reflections of the analysis considered, three practices are suggested regarding the application of the DSIGN model in narrative learning game design.

The answers to each research question are constructed on the course of two or three articles (see Table 10). Article 1 and Article 2 constitute the first part of the study, which especially focuses on the RQ1, i.e., on the concept of narrative. Article 3 and Article 4 constitute the second part of the study, which especially focuses on the RQ3, i.e., the question on learning game narrative design. The answer on the RQ2 is formed in articles number 1, 2, and 3, where the results with respect to player's role in game narrative proceed from game designers' indeterminate conceptions (Article 1), via a theoretically established abstraction of the player's position in a game narrative (Article 2), to a more elucidated specification of player's potential meaning negotiations and ponderings in the course of playing (Article 3).

TABLE 10 The relationship between the articles and the research questions.

Article no.	Articles participate to answer
1	RQ1; RQ2
2	RQ1; RQ2
3	RG3; RQ2
4	RQ3

6 DISCUSSION

6.1 Conceptual Implications

Hazel (2008) presented an assumption that the fragmental characteristic of the academic discussions on the application of narrative and related theory, for example, in educational contexts, stems from the complex nature of narrative itself. As a result, there are domain-specific discussions, difficult to reconcile with each other. Consistent observations were made during this study, along with the game designers' narrative -related analysis, as well as, when reviewing the ongoing academic discussion on narrative learning game design (described in the section 3.3.). The proposed Semiotic-Cognitive Model of Narrative aims to offer a framework, which is applicable on narrative digital game design and instructional purposes. Despite that the framework highlights through its structure a separation of the four constitutive design areas of narrative, within the entirety of the framework a more coherent discussion on instructional digital game narrative design and its various methods could be conceivable in future.

In order to reflect to the previously conducted debate-like discussion on digital games and narratives (introduced in the section 3.1.), according to the constructed view on narrative, in a digital game, narrative can manifest as completely unconnected content (in Malone's, 1981, terms, that would represent the extrinsic type of fantasy), or construct more or less meaningful alliances, as further specified by Aarseth (2012) (in Malone's, 1981, terms, these cases represent the intrinsic type of fantasy). Ontologically, the question about narrative and digital games concerns two separate projects of different proportions, the human being's mental one that evolves along generations, and the media-related other one that is continually developed by creative individuals, respectively.

Such narrative digital games, which employ the productive mode of interaction (Ryan 2004a), enable players to conduct improvisational actions within the limits of the system (Tanenbaum & Tanenbaum 2009), and make it possible to the players to perform individualized narratives through the system (Ryan 2004a). The players interpret so that they can construct new goals and plans for next performances. This implies that the players must both curiously strive to

understand the designer's intention and surrender so that they are able to customize the narrative personally meaningful for themselves. The process forms a circle, because new understandings are turned to new goals and plans, so that new improvisational acts can be conducted, again. This is how the player acts as a storyliner, who selects and implicates the significance of specific story components through the conducted activities.

Given that narrative games often are relatively long and time-consuming, and are played in several sessions. *Between* the playing sessions, the player may ponder the developing game story in the same way as any other unfinished narrative reading (weekly tv-series she follows, or a novel, which she reads ahead a chapter per night), as well as, relative to game playing, that is to say, similarly as during the playing sessions. This means that the course - to configure in order to be able to interpret, or, to interpret in order to be able to configure – may alternate in the long run. Evidently, in this respect, there is no need to strictly differentiate digital games from other forms of art and entertainment. Not to mention cases where a digital game is linked to some existing narrative context and transmedial storytelling.

For the Semiotic-Cognitive Model of Narrative, the points of comparison within narrative theories are such as the narrative models proposed by Chatman (1980, p. 24), and Schmid (2007, p. 182). The model proposed in this study differs from Chatman's quadripartite model in that the models determine the elements of narrative, in a manner of speaking, in different scale. The Semiotic-Cognitive Model of Narrative is more like a close-up on narrative constitution, specifying the separable objects of construction and design, whereas Chatman's model of narrative constitution presents a view, which focuses to make a separation between narrative and other forms. Furthermore, Chatman's view seems to stress the end-product side of narrative, narrative being a product. In Semiotic-Cognitive Model of Narrative, there is no indication for time. However, it was defined that the model presumes the coexistence of the areas, i.e., a continual dynamic interplay between the areas, so that narration and narrative message can be constructed in the production process, as well as, in the reading and interpretation of narrative. The interplay between the areas takes place – in accordance with Polkinghorne's (1988) view on the realm of meaning – in form of a working awareness, which recognizes patterns of different quality, and produces connections or relations among the patterns. In other words, the elements of the proposed narrative model are brought together *because* their interaction constitutes the narrative process, which results in narrative message. The passage of time is, thereby, implied by the model, and hence, the end-product- and the process –sides of narrative are considered as inseparable.

Schmid's (2007) model of narrative constitution presents a post-mortem of the creation process of narrative, which includes separate levels, on which the author makes choices, for example, regarding the components of the story events (on first level), the way of linearizing the events (on second level), and word choice (on the third level). Hence, Schmid's model presents an artificial composition of narrative aimed to aid elucidation of its subject. It presents nar-

rative as a series of author's selections, which can be turned into an analysis structure, but, in practice, necessarily does take place as such during narrative creation process. Besides, although Schmid's model could be of use for game narrative designers, as such it does not open up relative to the educational use of narrative. The areas separated within the Semiotic-Cognitive Model of Narrative offer mutually separable objects of game narrative design. In design documentation, the areas can be considered by means of existing game design document types, such as, character bibles and maps of the story world (Story Components), look and feel documents (Response to Narrative Stimuli), flow charts, fish bone charts, or tree models of the hypertext structure of the game narrative (Story as a Complex System of Facts), and more traditional forms of documenting, borrowed, for example, from screenplay writing (Material Representation and Multimodal Discourse). Furthermore, in respect of educational use of narrative, the Semiotic-Cognitive Model of Narrative highlights separate areas of narrative, through which narrative learning support can be approached and carried out differently.

The elements of Ryan's (2005a) medium-free narrative definition were applied, when the Semiotic-Cognitive Model of Narrative was constructed. However, in Ryan's (ibid.) definition, the mental images of the story components constitute the narrative signified, whereas in Semiotic-Cognitive Model of Narrative, the mental images are considered as substance of narrative signifier. Thereby, in the proposed narrative model, the narrative signifier is extended to cover particular type of mental responds stimulated by the perceptible or language technical means of expression. In addition to this, in the proposed narrative model, the story components are recognized as the substance of narrative signified. Thus, the proposed view suggests separation between ideas and particular mode of representations of human cognition, which imitate perception, and, hence, media representations, as well. This kind of separation can be useful, when we think about why narrative is so applicable to support learning, or, why, in the first place, narratives can offer experiences, which are *as if* they were real experiences, we only know (for example, on the grounds of the form of signifier) that they are not.

The latest generations have born in a world, where various media forms almost continuously influence in our everyday life. Hence, it is reasonable to assume that media has an effect on human being's developing cognition, and on how we construct life and experiences. It is equally reasonable to assume that the current view of the *dominance* of how we continuously identify ourselves on narrative thinking is not a definitive situation. It must be emphasized that I am not claiming that narrative mode of thinking would be losing its significance for our life comprehension, identity work, problem solving, and other mental tasks so widely recognized during the last four decades. What I want to propose, is that the ability to employ various forms of thinking, and, to *switch between* different modes or positions of mind (for example, the emotionally responding one, the observing one, the analytical one, the criticizing one, and so on) perhaps evolves towards more extensive and flexible mind. At least, in the

today's world, there is a need for this kind of cognitive competence, as the present sets novel types of challenges for our mental life, wellbeing, and management between finite time and the continuous opportunity to reach (and send) enormous amount of information. Murray (1997) encouraged to ponder how digital narrative media is capable of recognizing and conveying the essential core of the human beings' shared experiences on this certain moment in time. The hybrids of digital games and digital narratives may be peculiarly capable of expressing the above-mentioned challenges and experiences of people of today. Furthermore, as a form of expression, digital game narratives gain the capacity of highlighting, not only the narrative mode of thinking, but also, the volitional employment of narrative thinking as one mode of the repertoire.

Playfulness, the algorithm-based conditions of potentiality, and the abstract subjects of co-storyliner's meaning negotiations set a novel type of challenge in respect of learning and instructional design. The learning game narrative designers are expected to apply expertise on instructional design, media specialties, and the learning subject, and, to map out in detail the inscription (as Ryan, 2004a, called digital texts), while, besides, anticipating the self-rewarding execution of the inscription (i.e., the playing experience). If through narrative it is possible to demonstrate how an expert works out how to make the decision in a problem solving situation (Polkinghorne 1988; Jonassen & Hernandez-Serrano 2002; Clark & Rossiter 2008), at its best, through digital game narrative this kind of instruction and demonstration should be possible to put into practice in unequalled in-depth and experiential sense. However, if narrative is aimed to be harnessed to connect learning objective with playing objective (as recommended by McDaniel, Fiore & Nicholson 2010), this means that the expert narratives cannot be embedded in the game context as they are, but that the designer, too, must understand the expert type of thinking in order to apply it in game narrative design.

Finally, it is worth clarifying that the term co-storyliner indicates a conceptual position, which has to be situated *inside* a text, mainly in the same way as Aarseth's (1997) narrower concept of intriguee, or Iser's (1978) implied reader. The concept of co-storyliner does not represent a character, but a position, which is implied through the design decisions, and from where meanings related to game narrative are constructed. Thus, neither is co-storyliner an actual learner – a person who only rarely is present during the design process. Instead, the co-storyliner's position is assumed to be adopted by the actual player in order to construct appropriate meaning negotiations when pursuing agency over the game narrative. Therefore, game designers would bear the co-storyliner in their minds, even though they would (for some reason) design the game merely for themselves, or, even though they would be trying to design a game, which challenges to become played.

Therefore, instead of assuming that the narratological communication model would be irrelevant in the context of digital game narratives, my implication is that the narrative communication in game narratives is founded on *the assumptions stemming from the traditional narrative communication situation*, and

that in game narratives, novel type of spaces of communication are, then, created and inspected. It is essential, that the positions of the traditional communication situation are, thus, present by implication.

6.2 Implications Regarding the Application of Narrative Theories to Learning Game Narrative Design

How, and in which respect, the existing narrative theories can be harnessed for narrative learning game design? The learning game design task, in which the aim is to support player's learning through narrative design, can be approached as a topic consisting of multiple sub-tasks, for example, narrative learning design, and narrative game design. When observing the sub-tasks in isolation from each other, it seems to be evident that there exist relevant narrative-related theories ready to be applied.

In practice, learning game design contains both design of a learning occasion, which is a process, and the design of a learning material. In terms of narrative, the object of design contains both the recipient's experience of constructing the narrative and the narrative work. However, the learning objective may be involved either in a narrative process, in a narrative end-product, or in both aspects. Besides, a digital game as a media product seems to dispel the division between an end-product and a process, or, as Ryan (2004a) puts it, between a written inscription and user's self-rewarding execution of the inscription, which means, the enjoyable and enthralling playing experience.

Instructional game narrative designer may need to turn to diverse narrative theories and techniques, for example, principles derived from cognitive narrative theories, which can be applied to aid with ensuring that the learner is able to examine, identify, select and connect isolated data to episodes, and furthermore, to attach the episodes into causally and chronologically connected wholes. Besides, other narration-related theories may aid to focus the player's attention on her biases, and highlight inaccuracies or insufficiency of her existing knowledge. Furthermore, the designer may need to apply narrative theories considering how the story components should be initially invented – how to balance, emphasize, or make them more recognizable, identifiable with, emotive, and memorable. Thus, it is likely that the designer needs to apply several types of narrative theories in various ways, and in tandem.

The Semiotic-Cognitive Model of Narrative can aid the designer to keep the qualitatively differing narrative design areas, and the related plans, separated but proportioned during the design and development process. Through the areas separated in the above-mentioned model, multiple types of knowledge interweave (see Figure 2). Narrative as a cognitive artifact enables the application and reflection of one's own personal cognition -based knowledge (such as life experiences and attitudes) in the context of fictional reality and situations. Furthermore, the recipient can reflectively witness his personal experience of

the narrative reception process, while, at the same time, gaining more knowledge on discourse "grammatic", media literacies, and canonical conventions of narratives. For narrative designer, all these "channels of knowledge" open up either as opportunities full of potential for utilization, or, as additional burden with which designer must get along anyway. Depending on the game rule design, the designer can guide the player as a co-storyliner to activate her previous knowledge regarding particular channel of knowledge.

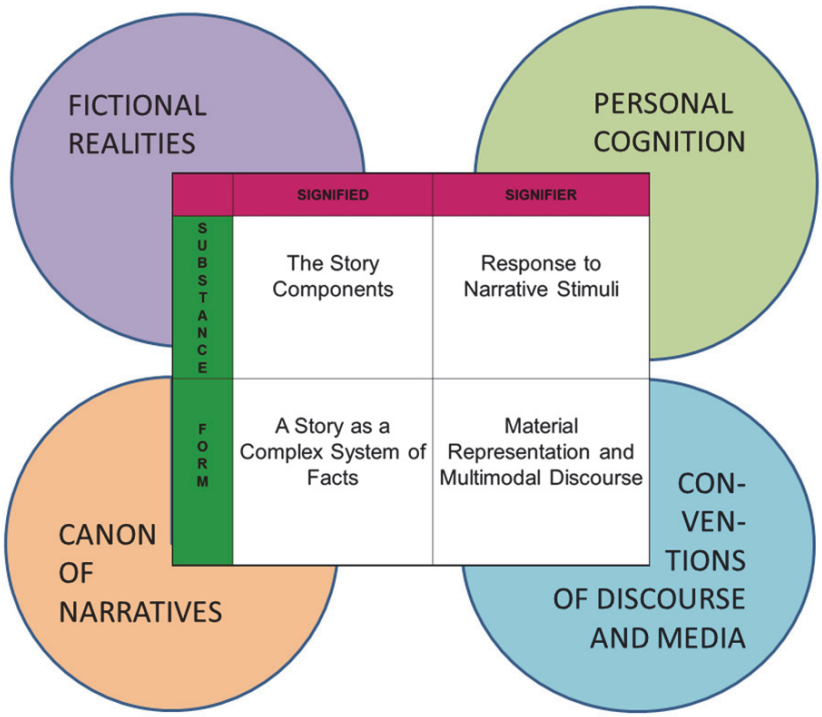

FIGURE 2 Narrative offers a semiotic-cognitive node for multiple types of knowledge.

6.3 Design Practice -Related Implications

From that digital game narratives are characterized by having algorithm-driven operations (Ryan 2004a), it stems that the story events do not need to be strictly predetermined, necessarily, but the potential of forming these events does. In narrative games, the limits of player agency should be designed with economical hold (Ryan 2006), in the context of learning game design, appropriately restricted interaction is even twice important, if the many advantages of narrative are aimed to be harnessed (Friedlander 2010). Additionally, game narrative -related experiences should be created so that the players can commit them-

selves through their actions, and the players' improvisation is further reinforced by the responses of the digital work.

The proposed DSIGN model demonstrates the game designer's numerous "angles of incidence" regarding game narrative -related design decisions, by which the limits of player agency are determined. By means of applying the DSIGN model, the designer can include the components of the learning objective (the sub-skills required to reach the learning objective) in relation to narrative design areas and game rules, and sketch the learning process in the form of player's meaning negotiations. Thereby, the designer can determine the appropriate areas of emphasis regarding narrative and rule design, and put into practice the economy of design with respect to player agency. Besides, by focusing on the player's meaning negotiations, the designer can strive to ensure the coherence and meaningfulness of the playing experience, when pursuing the agency, which creates opportunities for demonstrating commitment.

Tan, Ling, and Ting (2007) proposed that before any other design tasks, the special characteristics of the target learner-players should be determined with a pre-account. One of the conclusions of this study is that, for being capable to design the learning materials and the learning experience in form of digital game narrative, it is necessary to conduct a pre-account on the learning objective and on the target group.

In accordance with Anderson, Krathwohl, and Bloom (2001), and Osterweil and Le (2010), I conclude that the design process should start off specifically from the well-defined learning objective. This is because the learning objective motivates the design of playing experience, and determines the appropriateness of the co-storyliner's meaning negotiations during game playing. For example, the Taxonomy Table can be applied as an analysis tool for further determination of the *knowledge types* and the *cognitive processes* included to the learning objective (Anderson, Krathwohl & Bloom 2001). This helps the designer to better determine, what the learning objective is about, what kind of sub-objectives the main objective implies, and, how to approach these objectives in terms of co-storyliner's meaning negotiations. Hence, even though the constructivist approach to learning implies that the focus essentially is on the learner, I suggest that learning game designers at first profoundly clarify their own perception on the topic and the learning objectives.

Furthermore, when carrying the pre-account, it is necessary to specify the target learners' characteristics, relevant regarding the learning objective and the expected learning process, for example, age and the developmental stage. Besides, depending on the learning objective, it may be necessary to define other more specific skills and capacities of the target group, for example, the assumed stage of narrative competence, media literacy skills, and the extent of cultural foreknowledge. The characteristics of the target group should be taken into account, when selecting suitable narrative methods for learning and instruction. Besides, the characteristics and the special needs of the target learners should be taken into consideration in the formation of the story, so that the cognitive and

the emotional aspects of game fantasy could be harnessed to support learning and retention effectively, as instructed by Malone (1981).

It is the learning game designer's duty to ensure that the game narrative design does not include such uncoherence, which results in inconsistent co-storyliner position and player's time-consuming and irrelevant ponderings. Regarding appropriate meaning negotiations, essential is the fidelity and consistency of the fictional reality to itself (Article 4). When compared to the actual reality, the fictional reality can contain unusual phenomena or appear to be very simplified, but it must obey an internal logic so as not to break down its internal plausibility without any game or narrative related motive. Regarding this it could be added, in accordance with Aarseth (2004), that breaks of narrative logic may not cause irrelevant meaning negotiations, if those match up with the some recognizable game genre conventions.

Basing on the results of the game analyses, a design idea of "spicing" a learning game with digital game genre conventions, in a case where the learning objective is related to the narrative, proved to be problematic (Article 4). This is because the playful "spices" may react against the learning objective. It appears to be two distinct things to re-create a new version of existing source story by approaching the story through the customary conventions of digital game genre, and, to create a game rendition of an existing narrative, where game design is realized more or less innovatively. In the first-mentioned case, the additional (relative to learning object), game genre -related material, originally aimed to add an entertainment element, may end up leading the player out of the learning objective. Eventually, the player may construct a view that the learning subject itself cannot be interesting. Instead, creative designers often look for design solutions, by which they break the rules of genre conventions (more precisely, the player's convention-based expectations) in meaningful, even provocative ways.

However, the game genre conventions may serve instructional needs otherwise, for example, by simplifying and clarifying the game elements and reducing the player's need to conduct unessential meaning negotiations. Thereby, the game genre conventions may be exploited to create beneficial conditions for intrinsically motivating learning and flow experience. For instance, genre conventions, such as how to compose levels in platform games or fields in adventure games may help a learning game designer to create "obvious or easily generated goals" (Malone 1981, p. 357) with multiple levels of sub-goals.

Armed with the knowledge gained from the pre-account on the learning objective and the target group, the designer can collect the scattered ideas and bits of information into an outline represented in the form of the chart of the DSIGN model. The outline should describe how to offer the player the circumstances for learning, i.e. how to cause the co-storyliner to conduct meaning negotiations and ponderings in accordance of the learning object, how to include the learning objective -related knowledge into the story context, or, to the context of narrator or narration, and besides, how to select the means of expression and represent the knowledge so that the needs of the target group have been

taken into consideration. In the Table 11, a proposal is presented on how the chart of the DSIGN model could be applied as a basis of such design outline. The supplements of the DSIGN model-based chart are suggested basing on the juxtaposition and comparison of the results of the conducted game analyses discussed in Article 3. However, in comparison with Table 2 presented in Article 3, in the Table 11 presented below, the supplement on the cell denoting the intersection point between extrinsic ludus rules and the story components is specified as "applied pedagogical approach" instead of more extensive "approach to learning", which, in this study, is the constructivist, and especially the social constructivist, one.

TABLE 11 The proposal on how the DSIGN model could be applied as a basis of tentative learning game design outline. Specified from Article 3.

The Area of Semiotic-Cognitive Model of Narrative/ Ang's rule type	**Extrinsic Ludus Rules**	**Intrinsic Ludus Rules**	**Symbolic Paidea Rules**	**Semantic Paidea Rules**
The Story Components (signified)	Applied pedagogical approach	Learning objective as a course of action	Learning objective broken down into story components (factual and conceptual knowledge)	Attributes related to learning objective
Complex System of Facts (signified)	Involvement type: The foundations for pedagogical script	Cultural and media -related foreknowledge and skills	Fortunate circumstances for learning	Profound (meta stage) view of the nature of the subject
Response to Narrative Stimuli (signifier)	Generalized argument about the subject of learning objective	Key points of learning objective (procedural knowledge)	Learning objective as a change of player assumptions	What kind of questions the student should be asking from herself regarding the learning objectives?
Material Representation and Multimodal Discourse (signifier)	How the player is informed about the main goal? What kind of expectations are intended to rouse?	Steering the player's observation on the essentials. Introducing abstract concepts by utilizing game elements.	How actions are represented (metonymical choices). Sensory-choices (media-form - related choices)	Representation of the sphere of actions (metonymical choices)

For example, when framing the overall goal of game playing (extrinsic ludus rules), the player's primary relation to the fictional world, characters, and story events should be formed in correspondence with the applied pedagogical approach. Besides, this is closely related to how the learning objective is determined, as the (conception of) learning objective should govern the selection of pedagogical approach. The player's involvement type in digital narrative (in Table 11, in the intersection of extrinsic ludus rules and story as a complex system of facts) is determined in accordance with the pedagogical approach, and it lays ground for the pedagogical script, through which the learning process can be broadly conceptualized. For example, if the learning objective is to familiar-

ize the world and events of the Old Testament, like in the *Testament* game (discussed more closely in Article 4), and the selected pedagogical approach emphasizes the importance of one's own personal experiences, learners can be enabled to settle themselves in a role of a character, which is involved in the Biblical world and is able to undergo or witness the story-related events in that world. Furthermore, if experiential learning is to be emphasized, the involvement type in digital narrative should be internal.

When determining how the player can act in the fictional world, and how the fictional world responds to player activities, the designer selects how the learning objective related factual, conceptual, and procedural knowledge is recognized and further structured in the story world, and what kind of phenomena and characteristics are emphasized. If only few profitable courses of action (intrinsic ludu rules) are made possible within symbolic and semantic paidea rules, the design decision underlines, narrows, or focuses on the learning objective as particular course of action or procedure.

Furthermore, within the entirety of the story, game narrative can present changes, which are not results of *intentional* player activities (in Table 11, this falls in the intersection of semantic paidea rules and story as a complex system of facts). For example, the fictional world of *School of Dragons* enlarges and gets supplementary contents at times, which is common characteristic within the genre of massively multiplayer online role playing games. However, as well, such changes could be presented every time when a player enters the fictional world. For at being appropriate regarding the learning objective, in learning games such changes should be harnessed to denote some profound characteristics of the topic, for example, the fluctuating or unpredictable nature of the application area.

The player's possibility to make changes on the story structure through player actions (in Table 11, the intersection of symbolic paidea rules and story as a complex system of facts) may be essential requirement for learning, for example, about social situations related procedural knowledge, such like reporters' expertise in the *Global Conflicts* game series (discussed more closely in Article 3). On the other hand, if particular course of story events is substantial part of the learning objective, like in the case of the *Testament* game, this area of the game narrative must be more likely fixed. However, this does not necessarily hold true in cases, in which the aim is to test student's remembrance of a story already familiarized.

If the design decisions on the two upper rows of Table 11 concern the end-product side of narrative, and hence, foreground questions about the prerequisites of the selected pedagogical approach and the conception of knowledge, the two lower rows concern the process side of narrative, and foreground design decisions regarding how to support the player-learner through the construction process. The designer must consider both perceptual stimulus type of means of guiding and scaffolding, and, the cognitive type of means of instruction, which operate with learner's existing knowledge (including its distortion and lack), expectations, biases, mental images, and the self-reflective processes forming in

the long run, as the player's expectations meet the terms of reference opening up over game playing.

I believe that by compiling and clarifying the design ideas as a DSIGN-model-based outline, the designer is able to better manage other, more specific design blueprints of different kinds, side by side. Especially in extensive learning game narrative design projects, with this kind of document, it can be ensured that single design decisions are made consciously regarding the overall picture. Thereby, the designer can go through the design idea behind game narrative and rule design, and tentatively test its coherence and accuracy regarding the distinct design areas of narrative, from the player's anticipated point of view. From this kind of early-stage plan, the designer can advance his work towards more concrete and more detailed, well-reasoned design decisions. Finally, this is how the fragmentary information regarding the learning objective, target group, learning approach, educational and instructional methods, outlook and approach on the subject matter of the learning objective, the initial story ideas, and so on, can be turned to a coherent totality, which, for their part, can be turned to practical design decisions.

6.4 Reliability and Validity

Regarding the academic debate concerning digital games and narratives, it has been noted that actually the whole discussion was based on misunderstandings, that actually there were no debate, or, that the discussion should be recognized as multiple debates (Frasca 2003; Aarseth 2012). Either way, the several unsolved dead ends of game and narrative -related discussion, as well as, the challenges of approaching narrative as a medium independent cultural form, have resulted as fragmental characteristic of the overall research discussion. Such situation hinders interdisciplinary and applied research on instructional digital game narrative design. Hence, it is reasonable, first, to start out with research questions focusing on the theoretical view of narrative constitution in the context of digital games and playing, and then, to proceed with the how-oriented research question on instructional game narrative design.

The digital game design field develops rapidly. Clearly, huge amount of new game design guidebooks has been published after the year 2008, when the guide book data was collected. However, the totality of 11 versions of narrative definitions or conceptions, which was recognized during the concept-oriented analysis, contained acceptable extend of variety. It does not seem probable that the designers' conceptions on narrative would have increased recently significantly. This is true even though the methods of constructing digital discourse would be further developed. This assumption is supported by the acquaintance of the current state of narrative studies: the 11 versions of conceptions on narrative presented quite comprehensively more or less modified references on existing threads of narrative studies.

It could have been advantageous for the study, if more narrative learning games with significantly differing learning objectives were included in the learning game -data. When the game-data was selected, the representativeness of various game genres (above all, the inclusion of both various RPGs and adventure games) was taken into account. Unfortunately, for example platform games with narrative designs were not represented in the game-data. At that time, it was learnt that there is digital learning games with narrative design and with such learning objectives, which relate on narrative differing ways, when compared to the learning objectives of the games included in the data (for example, various games teaching literacy skills, in which case text and reading may be more or less in an instrumental role regarding the narrative, whereas narrative design may create a kind of scaffolds). Unfortunately, these games were not available for research.

I have pursued to carry out transparency in the description of this study to the best of my ability, and the same is true regarding the constructed interpretations and conclusions. I assume the transferability and generalizability of the results acceptable, as the results are applicable – as far as I can tell – to the consideration of any kind of narratives that are found from digital games (the Semiotic-Cognitive Model of Narrative), games with narrative design (DSIGN), and player positions in narrative games (co-storyliner). The contribution of the study is in establishing the conceptual basis for specifying the design solutions of existing learning game narratives, and for designing new ones. If the design process starts off according to the proposed guidelines (especially regarding the pre-account of the case), the application of the DSIGN model will be better accessible.

The research could have been conducted applying different methods, as well. In the concept-oriented part, the designers' narrative conceptions and definitions could have been investigated by, for example, interviews. However, as the narrative conceptions substantially vary and often contain some kind of contradictions, it would have been challenging to be prepared well enough to the arising and unpredictably chancing directions of discussion. On the other hand, it is an advantage of the guidebook material that it enables the researcher to contemplate, how professional game designers put into perspective the issues coming under narrative design, and narrative design and other game design related issues – and how this can be proportioned with relation to the narrative conception or definition explicitly offered by the designer.

Additionally, the how-oriented research question could have been investigated, for example, by case studies, within which new learning games are designed and tested by learning experiments. However, this would have directed the focus of the research on a more practical side of design. Besides, learning experiments offer knowledge about learning results before and after the use of selected learning tool, and descriptions of the way and situation in which the tool was employed, for example, in a classroom. Instead, the phenomenological-hermeneutical analysis enables the researcher to reveal an insider perspective on how meanings are constructed in a given situation. The aim was to ap-

ply the results of the concept-oriented part to the how-oriented part of the study. As the Semiotic-Cognitive model of narrative composition defined the design areas, through which the narrative designer and the recipient construct game narrative -related meanings, the phenomenological-hermeneutical analysis enabled a way, by which it was possible to illustrate how the design areas appear in various games and game playing, and what kind of design questions should be considered on separate areas.

6.5 Recommendations for Further Research

Digital learning game narratives can allow the player to apply dialogical and syncretistically creative play as means of learning and knowing. Lindqvist's (1995, 2001) play world pedagogy conceptualizes small children's creative, play-based learning, which possesses similar characteristics. The relevance of creative playing for adults' learning needs to be investigated more in future. There already exists plenty of research especially on adults' narrative-based problem-solving. However, when compared to Lindqvist's play world pedagogy, narrative learning methods conceptualize adults' creative acts of learning more instrumentally, and precisely the intrinsic value of playful improvising in narrative contexts should be better understood also from the perspective of adults' learning. When compared to small children's situation, adults' creative play-based learning situation is inevitably different, as it can be assumed that there are differences stemming from, for example, adult's emotional needs, and the wider amount of background knowledge and life experience. Presumably, this will be more topical subject in future, as various playful phenomena become more frequent and generally accepted in adults' culture.

The research design of this study involved that the findings of the analysis, in which the game designers' narrative conceptions were investigated, substantially guided the subsequent choices made between the applications of various narrative theories. In future, more investigation could be done on the applicability of narrative study -related possible world theories on learning game narrative design, especially regarding the designer's task of inventing the suitable type of story components. Besides, with respect to inventing the story components, it is still unresolved, how to find out the emotional needs of the target learners in order to better support the learners' motivation, as demanded by Malone (1981). Furthermore, along with the growing understanding on the connections (other than motivation-related) between learning and the learner's emotional and affective experiences (see, for example, Picard et al. 2004), it is assumable that in future we will see instructional guidelines for how to design learning materials, environments, and experiences regarding learner's affects and emotions. At that point, some narrative-related theories, other than those discussed in this study, could be considered for potential application in order to deepen the guidelines within the areas of the DSIGN model. For example, cognitive film theory already has been applied in the context of digital games with

a special interest on how various emotional effects can be caused by different design decisions (regarding, for example, how the sound design of horror games arouse and sustain the player's terror, see Ekman & Lankoski 2009), and besides, more generally, how and what kinds of emotions participate in the game playing process and in the reading and interpretation processes of audio-visual narratives (Grodal 2003).

In future, the next step with the development of the DSIGN model is to apply it in a learning game design process. Besides, more learning game analysis could be conducted with the DSIGN model so that more regularity regarding the design decisions with respect to the 16 intersection points could be recognized. It can be assumed, that after multiple analyses on games, which gain same type of learning objective (recognized, for example, with the Taxonomy Table), particular type of design "profiles" and principles could be brought out. These could serve – not as a rule book but – as increasing best practices -type of guidelines for learning game narrative designers.

TIIVISTELMÄ (SUMMARY IN FINNISH)

Tämä väitöskirjatutkimus keskittyy tutkimusongelmaan, kuinka digitaalisen pelin narratiivisuunnittelun kautta voidaan tukea pelaajan pelaamisen aikaista oppimista. Tällainen kysymys muuttuu käsitteellisesti haastavaksi, kun siihen koetetaan etsiä vastausta narratiiviteorioiden, modernin pelitutkimuksen tai oppimispelien suunnittelua käsittelevän tutkimuksen alueilta. Keskeisin ongelma palautuu narratiivi-käsitteen monimerkityksisyyteen ja narratiiviteorioiden monimuotoisuuteen. Tarinallista oppimispelisuunnittelua koskeva tutkimus on ammentanut lähestymistapoja narratiiviin erilaisista narratiiviteorioista sekä käsikirjoittamisen ja luovan kirjoittamisen perinteistä. Tämän seurauksena aihetta käsittelevästä tutkimuskeskustelusta onkin muodostunut varsin sirpaleinen: Usein eri lähteissä esitettyjä suosituksia on vaikea sovittaa yhteen, eivätkä eri tutkijat selvästikään tarkoita narratiivilla samaa asiaa.

Tutkimuksessani tarkastelen ensinnä, miten 'narratiivi' voidaan ymmärtää ja millaisia narratiivimääritelmiä voidaan soveltaa, jotta kyseistä käsitettä voitaisiin käyttää sekä narratiivisten oppimisnäkökulmien että digitaalisten pelien tarinallisuuden (suunnittelun) yhteydessä. Toisekseen tarkastelen pelaajan asemaa tai roolia pelinarratiivin aktiivisena vastaanottajana. Lopuksi tarkastelen, millaisia yleisiä suosituksia oppimispelinarratiivin suunnittelulle voidaan näin ollen ehdotettuja malleja ja käsitteitä soveltaen esittää, jotta pelaajan oppimista pelaamisen aikana tuettaisiin kokonaisvaltaisesti.

Tämän artikkeliväitöskirjan lähestymistapaa voi luonnehtia konstruktiiviseksi. Tutkimuksen tuloksena muodostettiin semioottis-kognitiivinen narratiivimalli, jossa erotetaan toisistaan neljä narratiivisuunnittelun pääaluetta. Suunnittelijan pelaajalle ennakoimalle positiolle ehdotettiin yleisnimitystä yhteisjuonellistaja (*co-storyliner*). Lisäksi tutkimuksessa muodostettiin instruktionaalisen pelinarratiivin suunnitteluavaruutta kartoittava suunnitteluviitekehys, jossa eritellään narratiivin neljän suunnittelualueen ja digitaalisen pelin sääntöjen väliset mahdolliset risteämiskohdat. Sääntöjen ja narrativialueiden välisiä kytköksiä suunnittelemalla pelisuunnittelija laatii puitteet, jossa pelaaja pelaamisen aikana tuottaa merkitysneuvotteluita ymmärtääkseen omia toimintamahdollisuuksiaan ja ottaakseen nämä toimintamahdollisuudet yhä laajemmin ja paremmin käyttöönsä. Nämä merkitysneuvottelut tunnistan pelaajan oppimisen kannalta erityisen keskeisiksi.

Tutkimus osoittaa digitaalisissa pelinarratiiveissa piilevien suunnittelumahdollisuuksien moniulotteisuuden yleensäkin, ja pelinarratiivisuunnittelun erityisen haastavan luonteen oppimispelisuunnittelua ajatellen. Peleihin voidaan sijoittaa tunteisiin vetoavia tai kiinnostavia tarinoita, jotka käsittelevät oppimistavoitteeseen liittyviä aiheita. Digitaalisen pelin ilmaisussa voidaan ottaa käyttöön muita olemassaolevia median muotoja ja ilmaisutapoja ja tukea näin oppimista useiden eri aistikanavien kautta. Monipolkuisiksi käsikirjoitetuilla tarinarakenteilla voidaan myös hahmotella vaihtoehtoisten tapahtumaketjujen potentiaalisia kulkuja, millä voidaan tukea esimerkiksi ongelmanratkaisuun liittyvää oppimista. Ennen kaikkea oppimispelien narratiisuunnittelijan tulisi hahmot-

taa pelisääntöihin ja narratiivin eri suunnittelualueisiin liittyviä yksittäisiä suunnitteluratkaisuja kokonaisuutena, jossa pelaajalle tarjotaan oppimistavoiteen näkökulmasta perustellut puiteet pelaamisen aikaisille merkitysneuvotteluille.

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ORIGINAL PAPERS

I

NARRATIVE DEFINITIONS FOR GAME DESIGN: A CONCEPT-ORIENTED STUDY OF NINE COMPUTER GAME DESIGN GUIDEBOOKS

by

Sanna-Mari Äyrämö & Koskimaa, Raine 2010

Interdisciplinary Models and Tools for Serious Games: Emerging Concepts and Future Directions. R. Van Eck (ed.), USA: University of North Dakota, 2010, pp.1-29.

Chapter 1
Narrative Definitions for Game Design:
A Concept-Oriented Study of Nine Computer Game Design Guidebooks

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ABSTRACT

Enhancing the benefits of learning games by utilizing narratives or narrative elements is not a new idea. Many existing learning games utilize more or less story structures, virtual worlds, and various characters as a part of a story. Computer game genres, such as adventure games and role-playing games, have received a lot of attention in the field of serious games by researchers and game developers. Hence, the potential of narratives for learning support is already clearly recognized. However, narratives have not yet offered unambiguous solutions to the design of learning games. For example, more often than not the use of embedded stories does not lead to a desired outcome that is an entertaining and pedagogically effective game. Moreover, it is not theoretically clear what is the best way to utilize narratives in order to ease, support, and heighten the player's learning process through computer game playing. This is a multidisciplinary design task and research problem that calls for interdisciplinary concepts and models. Existing narrative computer game design guidebooks and serious game design guidebooks outline the computer game designers' current opinions on the potential of narrative game design. In this chapter, the authors focus on the concept of narrative and the definitions game designers form of the concept. The purpose is to fathom game designers' conceptions of narrative in the analysis discussed in the chapter, reveal the theoretical background that dominates the designers' thinking, and adduce the consequences of current narrative concept usage. Additionally, the chapter determines three levels of narrative phenomenon, in which narrative should be named and consistently defined within the computer game design discussion. Moreover, the chapter uncovers blind spots in the use of narrative-

DOI: 10.4018/978-1-61520-719-0.ch001

related concepts, whilst further, if possible, providing suggestions for improvements. Furthermore, the chapter proposes a composite model of narrative definition that should be extensive enough for game narrative design purposes. Additionally, a new concept (co-storyliner) for the discussion related to the player's role in narrative computer game is proposed. Finally, the analysis results and conclusions, especially the proposed model of narrative definition, will be discussed from the viewpoint of the needs of narrative serious game design.

INTRODUCTION

There is growing discussion related to narrative in serious game design. This discussion concentrates on at least two larger subjects: the benefits that narrative can entail for learning purposes and the narrative possibilities of computer games. Two paths of discussion exist as independent research fields touching both academic participants as well as representatives from various practical fields. Thus, the question of narrative serious games design is highly multidisciplinary, and the topic includes both theoretical and practical aspects.

In the research and development of narrative learning game design, one extremely challenging point is the concept of narrative itself. Since various disciplines and theoretical lines use the concept in substantially different ways, there is a strong possibility that researchers and game designers do not understand each other. Subsequently, it remains unclear as to which concepts of the research field and wider discussion may be connectable or at least comparable to one another. In addition, this confusion advances futile controversies. Thus, arguably, there is a need for coherent concepts for narrative game design including narrative, story, and other concepts related to the definitions of these basic constructs. But before these concepts and definitions can be formed, it is important to understand the conceptual and theoretical roots upon which the contemporary discussion is based.

In this chapter, the definitions of narrative and story in nine game design guidebooks will be examined. The aim is to fathom game designers' conceptions of narrative: the basis that necessarily has an effect on game designers' narrative design work and opinions related to it. By using guidebooks, it was presupposed that the researchers would attain the various views of designers better than, for example, by interview. The definitions will be compared against the basic lines of existing narrative theory. In this way, the possible theoretical roots of these practical definitions may be revealed. Thus, the higher goal of analysis is to reveal the extent to which similarities can be drawn between individual game designers' conceptions and narrative. This is in addition to gauging the points at which they substantially differ. Behind the presupposition of designers' differing conceptions is the situation of the field of narrative theory: separate narrative theory lines answer the question of "*what is narrative?*" differently. In addition, it is assumed that the analysis of designers' narrative definitions will reveal the needs of game narrative design discussion in relation to several levels or aspects of the narrative phenomenon. Thus, one aim of this analysis is to determine these levels and to uncover blind spots in the use of narrative-related concepts, whilst further, if possible, providing suggestions for improvements. In the guidebooks, the definition may be conveyed explicitly or implicitly, or it may be consistent or inconsistent, but there must be some kind of definition, at least as a background assumption. This does not mean that designers would be held hostage by predetermined rules. In fact, true creativity requires some basic rules within or against which to play.

The kind of research discussed in this chapter could be characterized as concept-oriented interdisciplinary research. Phrasing of a question quite

similar to the one presented in this chapter can be found in Cavazza and Pizzi (2006). In Cavazza and Pizzi's article, a considerable number of central narrative theorists are considered through observing how the works of the theorists have been applied to the field of interactive storytelling (IS) design, focusing on the field of IS design research. However, in the spirit of multidisciplinarity, narrative theories will aspire to play a greater role in the research discussed in this chapter. These kinds of concept-oriented interdisciplinary research topics are quite uncommon. Yet, we argue that they are necessary if we hope to see the interrelation of computer game design theory and multidisciplinary concepts such as narrative and to further advance related interdisciplinary research.

Other recent articles related to narrative serious game design principles can be found, for example, in Dickey (2006) and Egenfeldt-Nielsen (2004). Dickey (2006) considers how computer game narratives can support problem solving, focusing especially on the adventure game genre. As a result of the analysis, Dickey formed design heuristics by which it is possible to create narratives for learning purposes in game-based environments or other interactive environments. Egenfeldt-Nielsen (2004) proposes a new perspective on narrative utilization in the design and use of computer games for learning purposes. In his approach, he exploits Marie-Laure Ryan's theory of narrative and narrativity as well as Jerome Bruner's theory of the role of narrative in human thinking. Egenfeldt-Nielsen emphasizes that one cannot guarantee that the learning subject will emerge in the central role of the play experience simply by including the learning subject in a game story. While characterizing the potentials of narrative utilization in learning game purposes, Egenfeldt-Nielsen stresses players' own narratives in a game experience. From this viewpoint, narrative can serve as a tool for ordering events and experiences. Dickey's and Egenfeldt-Nielsen's opinions are interesting and noteworthy, for as we will comment later in relation to the results discussed in this chapter, these kinds of facets of research discussion could be further reviewed regarding underlying narrative definitions and their consequences.

In the next part of this chapter, the theoretical background of the analysis will be framed. The relevant elements of narrative theory will be introduced, and there will be an attempt to form a generalized classification of three main narrative theory lines. The chapter's empirical section begins with a description of the research material and method. In the following section, the findings of the analysis of game design guidebooks will be presented. The classification of narrative theory formed in the previous part of the text will act as a starting point for the classification of definitions under consideration. Next, the results of the analysis will be discussed more specifically concerning the use of selected subconcepts or other narrative-related concepts that emerge as problematic cases during the analysis. Further, in this section, we propose a new concept for game narrative discussion. In addition, based on the research results and applicable narrative theory, we strive to form a holistic, yet functional, narrative definition for the needs of game design. Lastly, the research results will be discussed in the design contexts of serious games.

THE FRAMEWORK: THREE CATEGORIES OF NARRATIVE THEORIES

In this section, the purpose is to consider a relatively extensive topic, the multidisciplinary narrative theory. It is clear that discussion cannot be extensive and detailed within the limitations of a chapter. Therefore, the object of this section is to make clear the general picture concerning different theoretical approaches in relation to the concepts of narrative and/or story in the field of narrative research. Thus, our focus regarding narrative theory reflection is to examine *the prime differences* of approaches. This survey is limited

mainly to the *research of narratives* in which narratives are situated in the role of the research object as distinct from *narrative research*, whereby narratives are utilized in the methodological sense (like in some psychological research efforts that utilize the interview method and read the data as narratives). Further, narrative theories considered here are mainly limited to the subset of narrative theory that addresses narrative as expressed in some forms of media.

We propose that the discussed theories could be crudely grouped into three main areas. The theories in the first and second groups will be familiar to those who know at least the basics of narrative theory, as they have been introduced many times in textbooks. Thus, these will be discussed in less detail than the theories included in the third group, which are perhaps less familiar to the general reader.

Traditional Theories

The first group covers theories ranging from Aristotle's theory of drama to Vladimir Propp's study of story functions, in addition to the literature research applications of Carl Gustav Jung's archetype theory. Roughly, it includes the early trends of literature research to the advent of French structuralistic narrative theory, also known as narratology. However, this division is not airtight, as already the formalists' approach to literary theory contained characteristics of classical theories that are discussed in the next section. Commonality of traditional theories lies in their way of approaching narrative through some specific elements, for example characters or plots, which means in this context, events and their progression. Typically, in traditional theories, the given element is presented in the form of classification that determines, via generalization, the possible forms in which the element can manifest. It is essential that the element considered in traditional theories is tied to the level of story content that is presented through narrative expression. In these theories, the concept of narrative covers the forms of expression, where the manifestations of the examined element take place. Nevertheless, narrative is discussed only by implication because, at the time, an independent research topic such as narrative did not exist (Ryan, 2005a).

In the category of traditional theories, Aristotle's theory of drama is noticeably the most well-known and largely influential example. In *Poetics*, Aristotle says that art is an imitative activity by nature (Aristotle, 1967). According to this view, the expression comes closer to the narrative content and referent on the level of form, and thus the division of content and its expression exists only by implication and is not the overall focus of discussion. In *Poetics*, the plot is said to be the most important component of tragedy. Aristotle refers to the concept of plotting as the composition of the events. This includes the artist's tasks of selecting and organizing suitable events. From an Aristotelian viewpoint, through the plot, the artist attempts to imitate certain events, and more generally, activities or life itself. According to Aristotle, life *is* activity. In simpler terms, the main thesis of Aristotle is that in a story there is a beginning, middle, and end. In drama especially, the ending should include an element of *catharsis*, a kind of purification. Moreover, fitting with our description of traditional theories, characters are highly stereotyped, and there are only a limited number of possible character types (according to Aristotle, all characters of a story must be noble, seemingly true to life, and consistent). Furthermore, the selected mood (tragedy, comedy) dictates which sorts of events and characters can be presented.

Classical Theories

The second group encompasses the field usually referred to as narratology. However, some of the earliest narratologists can be situated within the first group, as also they foreground some specific elements of narrative (for example, Todorov fore-

grounds the events of the level of story content in his theorization). The roots of this approach rest firmly on Ferdinand de Saussure's theories related to sign and language use and Claude Lévi-Strauss's way of using the structuralist paradigm in myth research in the field of anthropology.

De Saussure states that language is a system of signs that connects certain speech sounds with meanings or ideas, thereby leaving all other kinds of sounds outside of the system (Culler, 1994). While constructing this type of system, de Saussure uses two main divisions, the first one considering the essence of signs and the second illustrating the difference between a single conversational situation and the system by which the communicating parties are operating. In de Saussure's (1983) theory, a sign consists of two parts: the representative element and the concept, *a signifier* and *a signified*, respectively. The term signifier refers to an appointed and observable side of a sign, for example a certain series of letters (Culler, 1994). Signified then, refers to a particular meaning, an idea or a concept, which is evoked by the signifier in the particular system of the language at hand (Culler, 1994).

As was said before, de Saussure additionally distinguishes between a language system that exists in communal use and conversational situations, that is, individual language uses (de Saussure, 1983). The former is named *langue* (system), and the latter is named *parole* (speech act) (Culler, 1994). In this division, the field of langue, "the nature of signs and the laws governing them" (de Saussure, 1983, p. 15), is the focus of the discipline Saussure was establishing. This later became the focus of narratologists as well. Structural narratologists consider individual narrative works as partial instances of a universal narrative structure. The main interest is on this narrative structure, and analyses of individual works mainly serve for a better understanding and specification of it.

As David Herman (2004) notes, one distinct characteristic of classical narratology is the attempt to separate the form of expression from the content of expression. This attempt is based on the Saussurean construct of sign. In the context of narratological research, the division of what a story is and the means of telling the story is further developed as the concept pair of *story* and *discourse*. This is where a story embodies the contents of narrative (i.e., events and existents that are communicated via narrative), whereas discourse refers to the form of expression in narrative (i.e., in literary text technical choices related to tense, mood, and narrator's voice). Furthermore, both of the levels are further divided into substance and formal aspects (Chatman, 1980). *Fabula* and *sjuzet*, the concepts based on Russian formalism (see, for example, Boris Tomashevsky 1925*Teorija literatury. Poètika*), were acquired in structuralism and narratology. Through these concepts, the division is made between the chronological series of story events (fabula) and the presentation order of the events (sjuzet). In the context of classical theories, the concept of plot refers to the second option. These concepts, and several other alternatives proposed for the dividing purpose of narratology to consider narratives in detail, are only partly overlapping. The confusion is yet worsened by reducing translations: in narratological texts translated to English, fabula is often translated as "story," whereas sjuzet has been referred to as "narrative" (Rimmon-Kenan, 2006).

The technique by which the events are revealed and arranged is a question regarding the level of discourse. Furthermore, questions related to (the character of) a narrator can be separated from a path, "shaping principle or dynamic" (Abbott, 2008, p. 18), which takes form in the presented logical and causal continuum that connects the events of a story:

The events in a story are turned into a plot by its discourse, the modus of presentation. The discourse can be manifested in various media, but it has an internal structure qualitatively dif-

Table 1. The three levels of narratives according to structuralist narratology

Concept	Levels
Story/Fabula	Events in chronological order
Plot/Sjuzet	Events in the order they are recounted
Discourse	The way in which the plot is presented

ferent from any one of its possible manifestations. (Chatman, 1980, p. 43)

Thus a different composition of events of a story produces new plots, and it is possible to tell the same series of events by using various plots.

Both Lévi-Strauss's structuralism and Saussurean semiotics are meant to be applicable to multifaceted areas of human culture. In addition, the stories conveyed through different media should not be beyond the scope of such approaches. According to Claude Bremond (Chatman, 1980) and Roland Barthes (1977), narratives can be translated from one medium to another and remain unchanged. In addition, according to Barthes (1977), narratives can be mediated by spoken or written language and additionally through images, animations, and gestures. This view was particularized later by the concepts of structural narratology, story, and fabula or was more generally signified as something that can be transferred from one medium to another, whereas discourse, sjuzet, or the signifier, is more dependent on the characteristics of the given medium (Herman, 2004; Rimmon-Kenan, 2006).

However, throughout the research of narratives in new media forms, it is obvious that classical narratology has problems regarding its application outside the research of literature or conventional narratives. The problem is that the theories of narratology tend to foreground verbal language and especially the level of narrative discourse. Thus researchers of new multimodal media forms have not found these theories sufficient. Further, in some cases, the application of the narratological narrative approach has even evoked irritation and accusations for subordinating new media forms to the logic of traditional verbal language-based media forms.

New Theories

The theories constituting the third group are to some extent reactions to the limitations of the previous approaches. Additionally, the growth of cognitive theories in psychology since the 1960s has had a strong influence on some new narrative theories, which will be discussed soon. Furthermore, behind new theories lies the larger humanities phenomenon, generally called the Narrative Turn, in which narrative was adopted not only as a research object but also as a methodological tool for several disciplines. The new period of narrative research did not mean total reversal, since in many cases theorists have utilized the structuralist starting point, or Aristotelian plot concept. As a result, new definitions of narrative have emerged.

The highly influential narratologist Shlomith Rimmon-Kenan (2006) proposes a new definition for narrative that should be suitable for the new circumstances. She imposes two principal features that must play a central role. The features are *double temporality* and *transmitting* (or *mediating*) *agency*. The first feature refers to the separation between story events that inevitably include a temporal aspect (also called story time), and the presentation of events in a text (the term text is used in a general way covering all types of signifying systems) that takes place on its own time level (also called narrating time or discourse time). The second feature, transmitting

agency, refers to a significantly larger meaning than just (the character of) the narrator. Thus the definition additionally yields to media such as films and other forms that do not necessarily utilize narrators in the same sense as conventional verbal language-based media. The structuralistic spirit is clear in Rimmon-Kenan's definition, as it highlights the story–discourse separation and grounds the approach for examining meaning-making mechanisms in media other than those which are verbal language-based.

Humans' *narrative competence* has been studied in the field of cognitive psychology along with other forms of gaining, organizing, and using knowledge (Polkinghorne, 1988). Jean Matter Mandler (1984) states that "story grammar is a rule system devised for the purpose of describing the regularities found in one kind of text. The rules describe the units of which stories are composed" (p. 18), whereas "[a] story schema … is a mental structure consisting of sets of expectations about the way in which stories proceed" (p. 18). That is to say, these two constructions represent two sides of narrative communications: mental and concrete. In Mandler's story grammar, stories comprise a start-up section, called "setting" in Mandler's terms, in addition to one or more episodes. The setting section presents the characters and describes the time and place of a story. In episodes, the protagonist encounters an event or events that cause him/her to set up some particular goal that he/she aspires to reach. The episode includes this action and its consequences: success or failure. Episodes constitute the plot of a story (Mandler, 1984). Probably the most influential scholar in applying this sort of approach has been Monika Fludernik whose "natural narratology" is based on everyday language use, mainly oral stories, instead of complex and lengthy literary narratives (Fludernik, 1996).

Marie-Laure Ryan has utilized the cognitive approach in her narrative definition, which aspires to cater to the new media context. Ryan (2004) makes the distinction between two potential situations: *to be narrative* and *to include narrativity*. In the first case, the semiotic object has been created for the purpose of producing a narrative script in the minds of the audience. In the latter case, an object has the capacity for producing a narrative script irrespective of its purposefulness. Partially, the distinction highlights that the content, which is aimed at being narrative, does not necessarily realize this target. By this distinction, the contemporary habit of referring to narratives in wildly different contexts can be understood. The division offers concepts by which to explain why some objects, such as history or human life, have been considered as narratives even though they *are not* truly narratives (the object is *narrativized*); they are not narratives as such, but they contain narrativity and are thus able to evoke narrative scripts in the receiver's mind.

Ryan (2004, 2005a, 2005b) participates in the discussion related to the transferability of the narrative, saying that if narrative is a "medium-independent phenomenon," then it has to be a cognitive construction by nature. This mental image is a type of meaning produced by a recipient, as a response to certain stimuli. Ryan further expands the elaboration to specify her definition for the concepts of narrative and story. She starts from the conception of H. Porter Abbott (2008), according to whom narrative is a combination of story and discourse, where story means an event or a series of events, and (narrative) discourse is the entity where the events are presented. In Ryan's media-free description, story has to be further specified because a bare series of events cannot constitute a story: only its raw material.

Ryan defines story by three necessary characteristics. First, story has to have a construction of a world including characters and objects. Second, some surprising "changes of state that are caused by non-habitual physical events" (Ryan, 2005a, p. 347) must occur. Third, the events have to be connected by causal relations, and there has to be a psychological aspect aroused by the connection of physical events as well as mental states and

events. According to Ryan (2005a), the features of the third item then constitute the plot of a story. Thereby, it seems as though Ryan's plot definition would be closer to the Aristotelian definition than the definition of narratology. When the three mentioned items are in force, a text can produce an effect that is by Ryan's concepts *a narrative script* (Ryan, 2004).

Herman (2003), another spokesman of the new narrative theory group, proposes that narrative theories could be considered a subdomain of cognitive science. Thereby, narratives could serve as research material for studying the models by which people understand the world. For this purpose, Herman (2003) defines narratives as cognitive artifacts, which are materials or objects enabling cognition, or at least making cognition more effective. Therefore, Herman's definition subordinates narrative under cognitive artifact. His goal is to find out the characteristics of narrative regarding its vitality and ability to serve as a mental tool and instrument in a variety of situations and domains. Herman (2003), states that narratives can offer tools for thinking, especially in problem-solving situations. According to Herman (2004), it can be said that *the form of the signified* is what especially matters when defining narrative, particularly when considering the use of a narratological chart, in which the story content and its expression, in addition to aspects of substance and form, are both distinguished.

In comparison to classical narratologists, new narratologists such as Fludernik, Ryan, and Herman seem to be more concerned with the *phenomenon* of narrativity than with the complex *forms* of a narrative. As a consequence, there is a tendency to disregard many of the nuanced narrative structures in favour of structurally simpler modes of human narrative usage. If we accept the so-called ludologist position in which games are not narratives, it makes sense to adopt this narrativity perspective: games and gaming experiences may be narrativized in various ways.

The newest narrative theories have arisen at a time when the concept of narrative has become popular in numerous disciplines (which can be said to be a manifestation and consequence of the Narrative Turn). The popularity and progress of the concept has caused some theorists to note that the concept of narrative is at risk of losing its meaning. This is especially true when it is connected to so many various research concerns and its meaning is expanded to include loose meanings such as assumption or hypothesis, as is the case in the contexts of psychoanalysis (Rimmon-Kenan, 2006; Ryan, 2005a). In sum, psychoanalysis-based meanings for the concept of narrative can be generalized to refer to mental tools for reflecting human self and experience of reality (Polkinghorne, 1988; Rimmon-Kenan, 2006).

Although the description of proposed narrative theory categories demonstrates how the categories have partially developed as research trends at certain time periods, the chronological consecution was not the reason for this order of information. As Table 2 presents, the differing concerns of the theories and their unequal approaches to the concept of narrative and various central subconcepts such as plot were used as assessment principles.

LOOKING FOR NARRATIVE DEFINITIONS FROM COMPUTER GAME DESIGN GUIDEBOOKS

The main goal of the following analysis was to find out how concepts of narrative and/or story are defined in contemporary computer game design guidebooks. Both explicit and implicit definitions were analyzed. The hypothesis was that definitions reveal the theoretical backgrounds that shape the writers' overall approach to the relationships and potentials of narratives in computer games. Hence, the definitions of narrative would also have an effect on the advice of the guidebooks. One presupposition was that at least some applications

Table 2. The main differences of the three groups of narrative theories

Group	Where is the focus?	What forms the concept of narrative?	What is meant by the concept of plot?
Traditional Theories	Some element of story content, e.g., events or characters	Pinpoints narrative in some particular element of content	Series of events
Classical Theories	(General) narrative structure that becomes concrete in the text on hand	Divides narrative into levels of content and expression (and discourse)	"Path" of expression, whereby the story's events are revealed
New Theories	The phenomenon of narrativity	Considers narrative, e.g., as operations where narrative stimuli cause mental narrative pictures in the receiver's mind	Varies according to the influence of the preceding narrative theory (Traditional or Classical)

of the definition of narrative based on traditional theories would be found. This is due to baselines of these theories being common in, for example, prose- or screenplay-writing guidebooks.

Research Material and Method

The research material consisted of nine computer game design guidebooks (see Table 3). The research material we have considered in this survey includes books that: 1) discuss computer game design, 2) are targeted to people who need practical information about computer game design, and 3) are written by people who can be viewed as practical and/or theoretical experts of computer game design. Thus, the theoretically centered material (i.e., handbooks consisting of research articles, etc.) related to narrative computer game design was excluded from the analysis. The guidebook authors' approaches to narrative creation and serious game design were stressed in the analysis. Thus computer game design guidebooks that do not mention narrative creation or narrative utilization were excluded from the material. Moreover, the aim of analyzing *present-day* guidebooks meant that the guidebooks must have been published within the last 10 years. The nine books selected for the research material do not constitute all existing present-day computer game guidebooks. However, the number of them seem to present an adequate sample for our purposes.

Guidebooks focusing on interactive storytelling were borderline cases. Further, the topic of these books additionally implied that other kinds of products, rather than just computer games, were included in the scope of the subject. Yet, these guidebooks also discussed computer games. Therefore, two interactive storytelling guidebooks were included in the research material.

The analysis is principally qualitative, but it includes general quantitative notices as well. The analysis was conducted in two steps. In the first step of the analysis, the main goal, viewpoint, and focus areas of the guidebooks were recognized. The first step of the analysis was realized by the data-driven analysis method. This means that the general approach selected by the guidebook author(s) was recognized from the book itself. The key words used in the analysis included "narrative," "story," and "storytelling." Further, several other derived and synonymous words (on the level of standard language) were included if they were suitable for the framework (for example, "back story" and "storyteller" but not "storyboard"). One borderline case was the term "tale." This was included in the descriptions when found in the survey.

At the end of the first analysis step, the research material was classified into subgroups according to the main goal of the guidebooks, presented explicitly by the writers. In this analysis step, the classification was structured primarily according

Table 3. Classification of guidebooks by specified purpose

Guidebooks which focus on guiding in general with game design work (3)
McCarthy, Curran, & Byron (2005) The Complete Guide to Game Development, Art & Design
Rollings & Morris (2003) Game Architecture and Design
Vuorela (2007) Pelintekijän käsikirja [Game-Maker's Handbook]
Guidebooks which focus on guiding especially with game narrative or game story creation (5)
Bateman (Ed.)(2007) Game Writing: Narrative Skills for Videogames
Chandler (2007) Game Writing Handbook
Crawford (2005) Chris Crawford on Interactive Storytelling
Glassner (2004) Interactive Storytelling. Techniques for 21st Century Fiction
Krawczyk & Novak (2006) Game Development Essentials: Game Story and Character Development
Guidebooks which focus on guiding with narrative learning game design (1)
Iuppa & Borst (2007) Story and Simulations for Serious Games

to the guidebook authors' approach to narrative creation (i.e., Is narrative design featured according to the focus of the book, or not?) and secondarily according to the guidebook authors' approach to serious game design (i.e., If the book focuses on narrative design, is it focusing on serious game design too?). Narrative focus was emphasized in this way in the analysis. As a result we defined three subgroups of guidebooks:

1. guidebooks which focus on guidance in general with game design work
2. guidebooks which focus on guidance, especially with game narrative or game story creation
3. guidebooks which focus on guidance with narrative learning game design

The second analysis step was conducted by using both the theory-based analysis method and data-driven analysis method. This means that the research material was observed through certain theoretical frameworks, but, if possible, the findings were specified further. The classification of three frameworks formulated from the basis of narrative theory was used as a theoretical starting point in the analysis. The frameworks were named Traditional, Classical, and New theories. In the second analysis step, the research material was read through for the relevant parts in order to recognize what kinds of definitions of the key concepts ("narrative," "story," "storytelling," "tale," and relevant derivatives) were formed and utilized in the guidebooks to teach and describe how to create game narratives or game stories. The definition can be outspoken (explicit), read between the lines (implicit), or both (if there was conflict between the outspoken definition and the other discussion related to narrative). In particular, the central characteristics of the three narrative theory categories were utilized as criteria in the categorizing process (see Table 2). Questions posed included the following:

1. Does the definition in question include the division between separate levels of content and expression?
2. Is narrative approached only from the story content point of view?
3. What does the concept of plot mean in this guidebook?

Table 4. The distribution of theory-based occurrences

Categories	Traditional	Classical	New Theories			Psycho-analysis
Subcategories			Cognitive theory	Media-specifism	Series of events	(Story = experience)
A) Guidebooks which focus on guiding in general with game design work						
McCarthy et al.	**X**					**X**
Rollings & Morris	**X**					**X**
Vuorela						**X**
B) Guidebooks which focus on guiding with game narrative or game story creation						
Bateman (Ed.)	**X**	**X**	x		**X**	**X**
Chandler	**X**	x	x	**X**	**X**	
Crawford	**X**		**X**	**X**		
Glassner	**X**	**X**			x	
Krawczyk & Novak	**X**	x		**X**	**X**	**X**
C) Guidebooks which focus on guiding with narrative learning game design						
Iuppa & Borst	**X**		**X**			

The frequency of the appearance of some specific definitions was not the main criterion, and thus the analysis is more qualitative than quantitative in nature. The main goal was to reveal the theoretical basis that the authors used when concepts of narrative and story were considered and the consequences of doing so.

Results of Definition Analysis Reviewed

Division into Subgroups

In the first step, the nine guidebooks were divided into subgroups according to their agenda. In the first subgroup, the main purpose of the authors was to provide a general guide for computer game design tasks. In the second subgroup, the main purpose of the authors was to provide a guide especially for narrative computer game design. The third subgroup of the research material consists of the group of guidebooks that consider narrative creation in the context of the learning game development. Thus, the agenda of the books in the third subgroup was clearly much more specified than in the case of the first subgroup. The distribution between the subgroups can be seen in Table 3.

Occurrences of Narrative Theory Categories in the Data

In the second analysis step, the analysis of narrative and/or story definitions revealed the diversity of viewpoints, theoretical backgrounds, and other influences. There were several different definitions of narrative, employing various elements of the theories in different combinations, in some cases even in mutually contradictory ways. In this section, we gain an overall glance of the occurrences of narrative definitions based on the three narrative theory categories (see Table 4). A more detailed review of the guidebook material will be conducted in the next section.

The majority of the narrative definitions utilize some ideas based on the traditional theory group. From the first theory category, the Aristotelian view of plot and the need for conflict were often adapted in the definitions. The Aristotelian plot explication—the plot as a series of events—was

applied even to cases in which the structuralistic division of story content and its expression was also taken into account. Other characteristics of the Traditional theory group were also widely favored. In practice, this meant the utilization of several classifications, such as Jungian archetypes and various plot structure or conflict-type divisions. One often-mentioned source book was Joseph Campbell's *The Hero with a Thousand Faces* (1949), which does not focus on narrative theory but utilizes the theory of Jungian archetypes and considers a number of event series in stories collected from various cultures on different sides of the world. Furthermore, the guidebooks of computer game design often referred to other writing and scriptwriting guidebooks, and the theories adopted from these books were based on the traditional theories.

The structuralistic classical theories were found in three of the books. In Bateman (2007), the definition began with a separation of "narrative" and "story." The former was at first defined as consisting of methods by which a story is mediated to the audience. "Story" meant "the set of events driven by or affecting a certain set of characters (or character archetypes), which combine to provide a coherent narrative framework" (Bateman, 2007, p. 299). However, this clear division was soon obscured when game narrative was discussed in particular. It was said that the meaning of "narrative" should not be understood as simply a "story," since story functions only as a starting point for narrative. In this context, it is said that narrative is not the same as the methods by which it is produced. Instead, narrative is created along with the player's actions. It seems that in this statement, narrative is some kind of object of activity. The statement may refer to the player's experience, but it is apparent that narrative no longer refers purely to the level of expression. Later, it is stated that characters and events, which in fact were previously defined to be elements functioning on the level of story, drive narrative forward. Thus, in this guidebook, story and narrative seem to be interchangeable at different times. In the present definition, "story" and "narrative" constitute a combination that operates in particular circles. Yet, there seems to be problems in the description of how these operations take place.

In Glassner (2004), various divisions are outlined when narrative is defined explicitly. There is discussion of the external and internal structures as well as of the seen and unseen structures. However, these divisions are related to the manifestation of the final work and the writer's unrevealed plans and background knowledge about the story during the production process. Later, Glassner (2004) presents a division between plot sequence and view sequence. Here, the Aristotelian conception of plot is applied, so that it refers to a series of story events. View sequence refers to the order in which the events are presented to the audience. It is said that all the events of plot sequence do not exist in view sequence. The division is said to be the consequence of an author's selection and ordering of the material. Thus, in this narrative definition there seems to be a touch of recognition of the structuralistic division; however, the application of Aristotelian theory is still highlighted. Even the concept of plot is defined mainly by Aristotelian arguments regardless of the implicit recognition of the division between content and expression, although the structuralistic idea of plot is tentatively recognized in the definition of view sequence. Nevertheless, neither one of these two guidebooks made further use of the structuralistic approach.

Furthermore, Chandler (2007) makes a distinction between the concepts of story and narrative, even if more implicitly and only through the choice of words, in addition to other, more dominant, approaches. Thus, the case of Chandler will be discussed in the next section.

The third group, new narrative theories, is the second most utilized category. The group of new theories consists of so many different approaches to narrative that it was decided to further divide the category into subcategories according to the findings encountered during the analysis. The subcategories are based on the cognitive theory-

based approach, media specifism-based approach, and the definition of narrative as a series of events. The narrative theories based on the cognitive viewpoint include extensive "narrative as a mental construct" approaches as well as ideas based on the "aim-structure" (like Mandler's story grammar) of narrative or story. The third subcategory of the new theory category, the series-of-events definition, is extremely wide and as such also problematic, as we will illustrate later.

The narrative definition based on the psychoanalytical approach is so often mentioned in the guidebooks that it was decided to add it to the classification as an extra category. In these definitions, narrative is defined as the player's experience (or mental reflection) of a single play session. That is to say, narrative is defined as an individual and unique experience attained through one session of playing a certain game. The guidebooks vary in relation to whether or not the definition also includes external events such as interruptions to the narrative experience.

In some guidebooks there are, explicitly or implicitly, attempts to construct a definition of story or narrative (or both), as well as a separate definition of game narrative or game story (see for example Bateman, 2007; Krawczyk and Novak, 2006). All of these will be elaborated on in the next section.

Table 4 represents the occurrences of various approaches. The bolded X means that there is some explicit or clear application of the viewpoint, the smaller x means that there are more implied references to the theories or ideas utilized in the discussion.

Data Description: Designers Constructing Narrative Definitions

Group A: Guidebooks Focusing on Game Design Work

Table 4 shows that in Group A of the guidebooks, which focused in general on game design work, the narrative definitions are (in two cases of three) constructed by drawing on the traditional theory basis. They also always utilize the psychoanalytical-based definition of narrative as the form of one's own unique experience. In the case of Vuorela (2007), the definition rests completely on the psychoanalytical model. In this definition, a plot is said to be a plan related to what a player is going to experience during a game. Story, then, is the true experience that a player gets by playing a game and can include, for example, the situations where a player is having difficulties whilst playing the game. Therefore, according to Vuorela (2007), in all games there is a story and all happenings during game playing are included in that story.

Rollings and Morris (2003) build the definition of story on the classical, especially Aristotelian, theory of plot, as well as on the psychoanalytical-based viewpoint of narrative as experience. Here it is said that all games include a plot, yet the plot is mainly constructed by players. The guidebook drafts two possible cases. In the "bad" case, a game designer has determined one linear path (a plot) through the game and the player must follow the path to complete the game successfully. In the "better" case, a game designer has situated the plot elements (events) so that a player can find them through his/her actions. The difference seems to lie in how the player can receive and experience the story events. Are the story events imposed on the player, or does the player have to find them? In the context of character design, the game designer's opportunity to shape the playing experience and story content through allowing certain potential for the character is also discussed. Moreover, a conceptual extension occurs once again. This time, it is the concept of setting: according to Rollings and Morris (2003), all games have a setting. Thus any kind of space, even an abstract one, is enough. A particular world is not required for the definition of the setting. In this definition, the story is the experience that a player receives through playing the game, and which he/she can relate to others after the playing session.

McCarthy et al. (2005) rely heavily on the Aristotelian definition when they state that a game takes a narrative route when it "offers the player a prescribed beginning, middle, and end" (p. 58) as a linear experience. Furthermore, the psychoanalytical definition is employed through claiming that other kinds of games such as *Tetris* (Pajitnov, 1984) can be seen as abstract games or as games that enable players to create their own stories. According to McCarthy et al. (2005), then, all games include a story, at least in the psychoanalytical sense.

Group B: Guidebooks Focusing on Game Narrative or Game Story Creation

The guidebooks in Group B, which focused especially on game narrative or story creation, are distributed quite evenly into the given categories (see Table 4). Each guidebook falls into three or five separate subcategories, which illustrates the diversity of the aspects included in the narrative definitions. Traditional theories and series of events, which is a subcategory of the new theories, are the most used concepts or ideas in this group of guidebooks.

The case of Bateman (2007) was already discussed in the context of the utilization of classical theories or, more precisely, the utilization of the structuralistic division between signifier and signified. In this case, the definition of game narrative turned to take form as a combination, whereby the story and narrative operated in circles. In the definition of story, the meaning of characters as an inevitable element of the story is stressed. In this narrative definition, characters' desires determine all the central story events, and thus, without the character, there would be no story.

Bateman (2007) represents four basic forms of video game storytelling, which include implicit narrative, formal narrative, interactive narrative, and interactive story. In implicit narrative, or *emergent narrative*, the single events are predetermined but not connected through formal design. It is expected that story could take form from the interactions between different game elements. In the opposite way, the formal narrative includes formally designed story elements. In the case of interactive narrative, the two forms of storytelling are combined so that the player's selection causes the player to follow a particular prewritten story path. In an interactive story, the player's choices have an effect not only on the level of narrative, but also on the level of story, which comprises characters, settings, and events.

In Chandler (2007), the medium-specific viewpoint of a story and narrative is advanced. Within the basic elements of a game story, there are namely cinematics, pacing, dialogs, text, and the arts of the game (such as graphics). Via these tools, it is possible to realize two kinds of narrative design modes: *logocentric* and *mythocentric*. Chandler borrows these concepts from Plato.1 According to Chandler, Plato defines two ways of reaching the truth: the rigorous logocentric way, which uses science and intelligence, and the spiritual mythocentric way, which operates through dreams and myths. In the logocentric case, Chandler argues that a game and its story include particular predetermined moments or situations, and the progression of the story is linear and controlled by the designer (cf., implicit, formal, and interactive narrative in the guidebook edited by Bateman). In a game designed in the mythocentric way, a player has the freedom to create the situations in an open game world (cf., the interactive story in the guidebook edited by Bateman). In this case, the player is named as author of the game events, because he/she selects the goals of the action and the tools needed for them, whereas the designer has to limit the larger framework of the events. Narrative, which seems to refer to the stage of the narration, is considered to be a spectrum. It includes the different possibilities of the logocentric and mythocentric approaches. Thus, it is somewhat discordant to say that in a mythocentric game, the "narrative context will not be as robust as that of a logocentric game, because the tools are simply not available" (Chandler, 2007, p.

112). However, this is possibly partly a consequence of the medium-specific viewpoint. After all, the medium-specific approach often ends up speculating about the question as to what extent a story, or more generally content, is bound to its expression forms and tools.

Crawford (2005) is a guidebook of IS design, one of the two borderline cases. When compared to the other IS guidebook, Glassner (2004), this book situates computer games in the margin of the application area. Whereas Glassner mainly considers the possibilities of computer game application, Crawford's story/narrative definition is quite different. The Aristotelian approach is used, but only as a starting point. Crawford says that the story, as such, is composed of a linear series of events and that all stories include some kind of conflict combined with the protagonist's key selection. In addition, Crawford sets one more content modifier for story: stories always boil down to human beings. But this is not Crawford's entire definition.

What makes Crawford's definition especially interesting is that it is based on both cognitive and medium-specific approaches. The cognitive viewpoint is particularly stressed. Story is said to be an entity and its content can be understood only by going through it in its entirety. Hence a story holds a particular capability of carrying and conveying knowledge, not in the form of a list but in the form of a complex system of facts and ideas. The medium-specific part of the definition stresses the idea that story is data, while storytelling is a process. In the case of IS, the (Aristotelian) plot has to be replaced by a network of possibilities. According to Crawford, in this kind of story space there is a metaplot, which is not determined by events, but by rules. This means that for a designer, the meaning of the theme is pronounced. A designer has to work on a "higher" or more abstract level of a story, and his role is to influence the larger curves of a story and only mediate the final manifestation of the story, which is an end result of the user's selections. Thus, the designer's work with narrative is characterized as potential-based design. However, Crawford specifically distinguishes his view on interactive story and its design from the idea of emergent story. He connects the idea of the emergent phenomena with confidence in serendipity by saying that it is "the hopeful fantasy that somehow, if programmers diddle around with complicated systems long enough, they'll eventually get a story to emerge" (Crawford, 2005, p. 137). In this way, Crawford stresses the designer's role and responsibility in interactive storytelling, even if it is true that it may enable new freedom also for the audience.

The other IS guidebook, Glassner (2004), was already discussed in the context of structuralistic applications. In this case, various divisions sketched in the book were considered. This was especially true in the division of plot sequence and view sequence, which was dissolved by the observation of plot and character work as a combined mechanism. Glassner explicitly asserts: "A story follows an interesting protagonist seeking a clear goal by addressing an ever-escalating set of difficulties" (2004, p. 36). The three basic elements in this definition are a protagonist, a goal, and a challenge. Later, the relationship of plot and character is further defined as "*character is action under pressure of plot*," and "*plot is what happens when characters act*" (Glassner's emphasis) (Glassner, 2004, p. 69). This is to say, the level of expression or narration has an influence on the level of story content. In this kind of definition, the story world would not exist as an independent entity. However, the division recognized in the book is stressed again by saying that story creation requires a narrator. On the other hand, the book pays much attention to the psychological depth of character creation. For example, Maslow's hierarchy of needs is proposed as support or a mental tool for character design. The object is to observe the character as a real person, who has a real person's mental depth. The story works as a process, which leads to the exposure of a character's inner self. Thus, the character's psy-

chological progression dominates the approach. This definition generalizes and foregrounds some psychological aspects of the character in the story content and, in that way, seems to lean towards the approach of traditional theories in its narrative definition.

Krawczyk and Novak (2006) offer the first part of their definition to the concept of story when various means of expression in different media forms are discussed. The emerging definition could be formulated, for example, in the following form*: a story is a human experience, or series of experiences, that becomes concrete as an event or series of events*. The writers also list the necessary elements of storytelling, which include theme, character, conflict, resolution, and message. Afterwards, story and plot as its components acquire additional definitions, such as "story is a causal path in its entirety" (p. 74) or "A plot is not a story. It only serves to help reveal a story" (p. 73). The revealing role of a plot is compared to how a hanger helps to show a coat, without the need for the viewer to interfere with it. Moreover, there seems to be a definition of plot that refers to the structuralistic plot concept, connected to the level of narration. This is surprising, as earlier the writers presented the idea differently, even in reverse to the basic idea of structuralism: "It wasn't until Aristotle that we started to see actual thought and structure emerge as a cohesive form" (p. 9). In addition, Aristotle's basic concepts (including plot) are explicitly and unconditionally approved. Furthermore, when writers discussed the player's ability to interact with story events, the Aristotelian plot definition is brought into play. The writers refer to the ideal situation as "story play," where a player can affect both the level of story content and the level on which the story is told.

In the introduction it is said that "the challenge for the game developer becomes how to guide players through the game space while allowing them to have their own personal story experience and even story 'co-authorship'" (Krawczyk and Novak, 2006, p. xiii). Later, in a general sense, it is said that "when we sit down to play a game, we may not always realize it, but we are engaging in a story—a story of our own design" (p. 181). Hence in the psychoanalytical narrative definition, the form that a player's unique experience takes is taken into account even though it is not discussed in depth in the guidebook. It can be said that in this case the two parallel definitions are accepted or conflated.

One obvious contradiction occurs when the writers—despite explicitly listing the character as one of the necessary elements of storytelling—say that there are also games without characters. They further say that in these cases, the role of setting becomes essentially important for storytelling. In this way, the writers implicitly argue that characters would not be fundamental elements of stories after all. This kind of viewpoint is deeply in conflict with, for example, Crawford (2005) and Bateman (2007).

Group C: Guidebooks Focusing on Narrative Learning Game Design

One book features in Group C of the guidebooks, and it is focused on narrative learning game design. Iuppa and Borst (2007) received two strong markings on Table 4 for the categories of traditional theories and for cognitive theory, which is a subcategory of new theories. In the book, it is explicitly said that a story should have a hero, a goal, and a challenge between them. Moreover, stories have a structure that can be determined in various ways. The writers note that, in this case, they have focused on the Hollywood structure, which refers to the Aristotelian notion of a story. Later in the book, the writers added a note to the previous list of story elements, which said that a hero should have some kind of fault that makes him especially vulnerable to the challenge of the story. By sketching the definition of narrative in the form of a situation, the writers present the story basically as a learning situation, whereby a hero is a learner who finally has to overcome his faults.

Iuppa and Borst (2007) stated that if one tries to ask an expert about issues usually mediated as tacit knowledge, one will probably get a vague answer. Yet, if one asks the expert to tell a story related to the subject, one may get much more knowledge. The writers explain the phenomenon using Roger Schank's explication, according to which people understand the world by forming mental models of it. Hence, in the writers' definition, the story seems to be first of all a mental tool by which it is possible to convey contents that otherwise are not able to be verbalized (cf., Crawford's definition of story as a system of facts). Thus, the definition of the concept of story seems to rely mainly on the cognitive approach.

Complete Results: The Variety of Narrative Definitions

To summarize, in the material, the concepts of narrative and story were used in the following ways:

1. Constant predetermined linear story (and its narration). (McCarthy et al.; Bateman; Chandler)
2. The player's own unique story and narrative that arises as a consequence of playing a computer game. This pertains to all kinds of computer games. (Rollings and Morris; McCarthy et al.; Krawczyk and Novak)
3. The player's own unique story and narrative that arises as a consequence of all of the happenings that are confronted during game play. This pertains to all kinds of computer games. (Vuorela)
4. Partially preformed and partially potential-based story content set by the designer and presented through narrative which arises from potentiality determined by the designer (i.e, player controls narrative; Bateman (ed.); Rollings and Morris)
5. Story and narrative that can have both preformed and potential-based manifestations. (Bateman; Chandler; Crawford; Krawczyk and Novak)
6. Non-preformed story that can be produced through potential-based narrative (story emergence; Bateman)
7. Story as a complex system of facts. (Crawford)
8. Story as a mental model. (Iuppa and Borst)
9. Story as a situation, which includes a hero, a goal, and a challenge between them. (Iuppa and Borst)
10. Story as human experience, or series of experiences, which becomes concrete as an event or a series of events. (Krawczyk and Novak)
11. Story as following the main character and events, while the character seeks a clear goal by addressing a set of difficulties. (Glassner)

The narrative and story definitions discovered in the analysis are diverse and operate on different levels. Definitions 1–6 relate to how the experience of story and narrative is created and how preordained this experience is. The first definition is completely conventional, and it can be found from the traditional and classical theory categories. Both Definitions 2 and 3 are based on the psychoanalytical approach. In Definition 2, the experience involves only game-related issues, whereas in Definition 3, there is not this limitation. Further, interruptions and other events extraneous to the game world may be involved in the narrative and story experiences. Definitions 4–6 focus more on the predictability or stability of narrative and story. In these definitions, the structuralist division between the content and the expression is recognized. Definition 5 seems to also include Definitions 1 and 4. In fact, it seems to be so extensive that it additionally includes an intrinsic contradiction: the combination of a potential-based story and formally designed narrative. However, none of the guidebooks present

this kind of vision. In Definition 5, narrative and story are presented as two-level spectrums of manifestations. Definition 6 differs radically from definitions 4–5, because it includes the idea that a player could be led to construct narration, which in turn creates the story content. This is to say that narrative could ontologically precede story content.

If Definitions 1–6 approach the key concepts by answering the question of how narratives and stories arise or are produced (both passive and active definitions included), Definitions 7–11 approach the concept of story by answering the questions of what story consists of, or what story is. Definitions 7 and 8 are based on the cognitive approach. The origins of Definitions 9 and 10 are more difficult to trace. The effect of the psychoanalytical-based approach can be seen in these definitions, but they are more refined compared to Definitions 2 and 3. Definitions 9 and 10 appear to be incomplete, possibly because there do not seem to be any implicit references to the recognition of the division of content and expression. In Definition 11, however, there seems to be a small attempt to recognize the level of expression ("following"), but it is not sufficiently distinguished from the level of content, and thus the definition appears to be unfinished.

According to the analysis results, in the field of game design there seems to be a need for various narrative concepts. Narrative/story should be named and consistently defined on three different levels. The three levels that came up are:

- the level of constant predesigned narrative/story,
- the level of narrative/story achieved by predetermined potential, and
- the level of narrative/story that is experienced during a single play-through.

BLIND SPOTS IN GAME NARRATIVE DISCUSSION

In the computer game design guidebooks, narrative theorists of the traditional class are often mentioned in the context of narrative definitions, whereas the influences of the classical or new narrative theories are adopted inconspicuously, without explicit notices. Especially in the case of the new theories, this is probably the consequence of writers' practical take on the subject.

During the analysis, a series of inconsistent concepts related to narrative arose in the context of narrative definitions. Often these concepts played an important role in the definitions of narrative or story. In other cases, the terms were used to describe possibilities of game narrativity or narratives. Inconsistent concepts include the following:

- plot
- setting
- coauthorship
- plot points
- metastory or metaplot
- emergence
- linearity

Plot

In the guidebooks, the concept of *plot* is defined in the following ways: the events of a story told in chronological order from beginning to end (McCarthy et al., 2005); the events that constitute a story (Bateman, 2007; Krawczyk and Novak, 2006); a series of events (Glassner, 2004); the one particular linear path through a story and/or game (Rollings and Morris, 2004); the plan concerning events or experiences that will be materialized during a game, at least in the starting situation of a game (Vuorela, 2007); the predestined plan for the outcome of a story, which is analogical for determinism (Crawford, 2005); the form of expression, for example non-linear or three-act-based

(Chandler, 2007); and the plot as a tool that helps reveal a story (Krawczyk & Novak, 2006).

In Iuppa and Borst, a particular plot definition was not found. Furthermore, McCarthy et al. (2005) as well as Rollings and Morris (2004) stated that games always have a plot (Aristotelian). However, according to Rollings and Morris (2004) plot can be mainly created by the player. Contrary to this, Vuorela (2007) stated that all games have a story, even if there would not be a plot.

In sum of these plot definitions, the general confusion between the concepts of plot, story and narrative illustrates reflections of different narrative theory categories. In particular, the definition examples highlight the difference of traditional and classical theory bases, as they offer different plot definitions; the majority of designers connect the plot to the level of story events, whereas only Chandler and Krawczyk and Novak in their second-mentioned plot definition illustrate the classical theory-based view of plot while connecting the concept to the level of expression. This result was surprising, as in the data there were other guidebooks that for some other reasons were more strongly influenced by classical theory in their narrative definition (see Table 4). Thus, the result illustrates how designers combine various influences inconsistently in their narrative definitions, based on different narrative theory bases.

In the context of plot, designers also revealed their conceptions related to the story and its potential to provide freedom for the player. In some plot definitions, the fixed nature of plot is especially emphasized so that it is presented as "the fault of plot," if a player cannot enjoy the free mode of playing in a narrative game. This conception may be the consequence of applying event-centered traditional theories like Aristotle's model for the dramatic arc.

The case of Vuorela (2007) illustrates the odd consequences from applying mere psychoanalytical-based narrative definition. What kind of story or narrative is without plot? Is it a story anymore?

Constitutives of Story

In the material, there was variation related to the basic elements that are seen as necessary subconcepts for constituting narrative or story. Glassner (2004), in addition to Iuppa and Borst (2007), leaned towards the definition that all stories include *a main character*, *a goal*, and *a challenge*. The combination of goal and challenge can be interpreted as a conflict. Also, Crawford (2005) agreed that all the stories include a conflict. Furthermore, Bateman, in agreement with Glassner (2004), as well as Iuppa and Borst (2007), maintains that all stories need to include a character. Crawford's view considering the inevitability of a character is presented implicitly; he discusses the content of a story by saying that in all stories the case is about humans, even if the characters are not human beings.

On the contrary, Krawczyk and Novak (2006) contend that story could be constructed without characters. "In games, where sometimes characters do not exist, setting becomes an essential part of the storytelling process" (Krawczyk and Novak, 2006, p. 46). Also, Rollings and Morris (2004) stated that setting, which is at the least "formalized universe governed by a few logical rules: the landscape of the reasoning mind" (p. 14), is featured also in the most abstract games such as *Tetris* (Pajitnov, 1984).

These differing notions related to the overall definitions of narrative and story may cause significant confusion to designers working with game narratives. Obviously, a computer game does not always need to have characters. But, whether the narrative definition is based on the traditional, classical, or new theories, characters are inevitable elements for story content. Equally, it is a matter for some speculation as to whether or not the space in a computer game without story content is

always the same kind of setting as it is in a story that requires the depth of a fictional world. If not, then should the abstract game space be separated from a story-related setting, or story world, by its own concept, such as the *virtual environment* proposed by Aarseth (2004)? According to Aarseth, this concept refers to "a simulation of a physical world, not necessarily our own and usually much less complex" (Aarseth, 2004, p. 364).

In summary, it can be said that story content needs to include a world, character(s), events, goal (the motive force), and challenges (the opposite force). We will utilize this list later in the section discussing a composite model of narrative definition.

Plot Points

The often-mentioned subconcept related to plot was the concept of *plot points*. Glassner (2004) defined plot points as basic units of storytelling, during which something happens in a story. Crawford (2005) used the term "substory" in quite a similar sense. According to Krawczyk and Novak (2006), "each point in time that causes further action is a plot point" (p. 74), and additionally, each plot point reveals more of the story. Rollings and Morris's (2004) definition is a bit different. Plot points were defined to be situations or events in which the player's expectations do not match with what happens in the story. Mainly however, these differences of definitions are matters of different viewpoints or emphasis and do not constitute remarkable confusions for game narrative discussion.

Metalevels

In the guidebooks, there are discussions related to the possible *meta*levels of story and, especially, possible metalevels of game story. Chandler (2007) used the term "metastory" to refer to events that take place around the player and in the background. According to him, especially in fixed story design (in Chandler's terms, logocentric story design), the design of metastory is stressed. But is this level of story really a metalevel? Usually metalevel is understood as presenting a higher abstraction level, and perhaps it would be clearer to reserve the metaconcepts for this kind of use. Crawford (2005) states that in a potential-based story design, the designer has to operate on a more abstract level of the story. This level does not consist of the story events which define the (Aristotelian) plot but instead consists of the rules, which define a sort of metaplot of the story. This metaplot includes all the potentials from which the actual plot can grow during each separate playing session. This kind of use of metaconcept seems to be more justifiable because it shifts the discussion to a higher level and explains the mechanism which makes the more concrete embodiment (the story plot) possible.

Emergence

Emergence is a concept often applied in the context of computer game narratives. In the material, the term is used in at least two different cases. In the guidebook edited by Bateman (2007), emergent narrative is the other name for the game storytelling type that in the presented classification is primarily named "implicit narrative." This emergent narrative "involves the interaction of elements within the game system to develop events that may be interpreted by the players as story—narrative results that are implicit to the game system" (Boon, 2007, p. 45). Seen from another viewpoint, the citation says that actually there is no narrative content in a game but that the player constitutes it by his conceptualization. Crawford described this kind of idea of emergent storytelling as a fantasy, where a sufficiently complicated system produces surprises that no one could expect beforehand. McCarthy et al. (2005) described a sample game stating that the emergent game play is utilized

to enhance a narrative-driven adventure. In this view, the phenomenon of emergence is tied to the creative game-playing mode and to the design style that enables that kind of playing. In the first and second cases of guidebooks, the concept of emergence is used essentially in the same way amongst them. In the last case, emergence is used in a strong way (emergence as something wholly unpredictable), whereas in the former case, it is a weaker emergence limited by predetermined rules and thus at least partially predictable. As it seems that these two types of emergence do not share the same problems, it is important to be specific when applying them.

Linearity

The concept that causes the greatest unclarity and confusion is obviously *linearity*. In the research material, descriptions such as linear-level design, nonlinear narrative or (game) story, nonlinear game world, linear objectives, nonlinear story missions, nonlinear game, nonlinear narrative content, player's nonlinear experience of story, nonlinear plot, nonlinear game play, the moment of nonlinearity, and nonlinear path are all present. Almost always, "linear" was not solely used in the descriptive sense but instead implied that in other kinds of cases, the opposite (nonlinear) alternative could be possible as well. Extensive use of the concept of linear meant that the ideas of the separate guidebooks were not comparable with each other. Also, every now and then it seemed that the concept had lost any exact meaning. Thus, linearity seems to have ended up as a kind of empty buzzword. The question of how this concept should be used in a uniform way in the context of game narrativity is challenging, and, as it would require deeper discussion concerning the game narrative expression, the question cannot be resolved in the limits of this chapter.

About the Nature of Narrative and Story

In Glassner (2004), the specific characteristic of narrative is illustrated through a comparison of story and game. It was said that on the level of content, "games are primarily about results, while stories are primarily about process" (Glassner, 2004, p. 214). In turn, Crawford (2005) characterized story on a more technical design-level by suggesting that story itself should be viewed as data, whereas storytelling is a process by nature. In many guidebooks, characteristics of narrative or story were described as alternatives and in some cases (especially in Chandler, 2007), as a continuum, whereby the poles are fixed narrative and freer form. Narrative is constructed in some kind of space of possibilities. According to the three levels related to the game narrative design that we mentioned at the end of the summary of definition findings, we could further add to the spectrum of narrative the psychoanalytical definition of story as a reflection of experience (then the continuum would include fixed narrative–potential narrative–the entire experience). It seems however, that this kind of narrative definition for game design purposes would be overextended. Thus, it might render meaningless the concept of narrative. This implies that all three levels should not be defined under the same concept of narrative, but the psychoanalytical aspect of narrative should be discussed with distinguishable concepts.

From Co-Authority to Co-Storyliner?

The last confusing concept was *co-authority*. The case is related to the often repeated declarative sentence that generally features in the form: "In a computer game, a player becomes an author of the game narrative/story"; or "In a computer game, a player can become an author of his own story." These kinds of statements are inevitably inaccurate if the psychoanalytical definition of narrative is dismissed as too vague. Besides, it

does not help game designers in their work when it is stated that in games stories should not be (entirely) preformed and that a player will have the responsibility of storytelling. It is clear that there has to be *something* preformed in regards to the story, and it is the designer's work to organize it. But maybe it is easier to start by asking: What exactly is the role that a player may fill in the computer game in terms of narrative?

In the guidebook edited by Bateman (2007), it is said that as a result of interactivity, a player receives control of narrative elements of the game, but mainly these elements are related to *how* the story is told (for example, the control of the camera) and not *what* the story is about. Krawczyk and Novak (2006) stated that players can further influence the causal relationships of story contents and, in this way, the plot (used here in the Aristotelian sense). The writers argue that thus, a player can be seen as a coauthor of the playing experience and plot. Moreover, the writers add that a player can also have an effect on characters if a game enables players to customize their own characters. However, Glassner (2004) presented two central spheres of a story author's responsibility, which are the design of the protagonist's psychological completeness and the ordering and timing of the most important plot events.

We propose that whether the game narrative is based on fixed story design or on potential-based design (as we previously argued, pure emergent-based design was considered as being founded on a problematic narrative definition from the viewpoint of game narrative design), the player's role could be defined and delimited as a "co-storyliner." In this case, the structuralist plot definition is brought into play. This means that in a fixed game story, the player can have an influence on the way that the story is being told. During this process, he/she carries out selection and ordering processes by which he/she forms the narration of the story for him/herself. In a narrative computer game, the interpretation of events and objects is inevitable for progression purposes (Eskelinen, 2001). The concept has roots in both "co-narrator" as defined by Koskimaa (2000), with reference to the role of the reader of hypertext fiction (although as there is no clear narrator–agent in games, the term cannot be adopted as such), and in Aarseth's concept of "intriguee" (Aarseth, 1997). Aarseth inserts the level of negotiation between the levels of events and progression and especially discusses the case of text–adventure games, where the negotiation takes the form of intrigue; the voice both describing the narrative situation and posing challenges or riddles for the player is intriguing. Thus the player adopts the role of intriguee, forced to solve the puzzles in order to proceed in the game. In nontextual games there is no such intrigant, and typically in action games, many of the challenges are not riddles but rather require dexterity and reaction speed.

With the co-storyliner concept it is possible to, first, employ the intuitively appealing notions of traditional narratology (co-storyliner is partaking in the formation of the sequence of events and driving them from the beginning to the end) and, second, to raise the abstraction level to encompass at least some of the structural relations of classical narratologists. Thus it may prove of important heuristic value for game development to recognize the role of co-storyliner in manipulating such dimensions in games, which relate to the Genettian notions of mood, voice, and tense (Genette 1980). With this approach, we may recognize aspects such as "gaming style," the fact that it is not only about playing through a game or winning the game but about playing the game in an individual style by, for instance, repeating certain episodes for the pure pleasure of it, slowing down or speeding the action at will, assuming a role as protagonist or as bystander. Thus, such juxtaposition as Glassner (2004) posited between the natures of game and story ("games are primarily about results, while stories are primarily about process" [p. 214]) will not become critical for narrative game design.

Composite Model of Narrative Definition for the Purposes of Game Narrative Design

Returning back to the definitions of narrative and story found in the material, we noticed that three of the samples deserve further scrutiny. In Definitions 7 and 8, the cognitive approach emphasizes *the form of signified*. As Herman (2004) claimed, these kinds of definitions may provide us with key information about the nature of story but are not enough in the instances of game narrative design. The last remaining definition, Definition 11, is as follows: a story follows a main character and events, while the character seeks a clear goal by addressing a set of difficulties. To construct a more complete narrative definition, we propose that Ryan's (2005a)*stimuli* could be taken into account, as well as the concept of story world (this element can also be found in Ryan's narrative definition). When these elements are combined with a structuralistic chart that recognizes the division between content and expression, we get the composite model of narrative definition presented in Table 5.

According to the composite model of the narrative concept for the needs of game design, the designer should create narrative stimuli that refer to some particular world, character(s), events, goal, and challenges. On the level of content, story is a complex system, whereby meaning is understood only through its entirety. In the composite model, "story" and "narrative" constitute a combination that operates in circles, as it appeared in the definition outlined in Bateman's (2007) guidebook. Here, our intention was to describe the relationships between the two ontologically divergent stages of content (signified) and expression (signifier) so that the mechanisms between them can be described in a reasonable way.

The three levels that proved to be needed for the game narrative design discussion were the level of constant predesigned narrative/story, the level of narrative/story achieved by predetermined potential, and the level of narrative/story that is experienced during a single play-through. The narrative definition presented in Table 5 aspires to be comprehensive enough so that at least the two first-mentioned levels can be considered under the concept of narrative as defined in this way. As was previously proposed, the psychoanalytical aspect of narrative, as the form of a player's experience, should be discussed with some concept other than narrative for the sake of clarity.

Furthermore, this analysis does not answer all relevant questions. In the future, aspirant game narrative designers will need more detailed theoretical knowledge about *the form of narrative expression* in the context of multimodality of computer games. Currently, this further detail can neither be found from scrutiny of the guidebooks, nor from the narrative theories discussed before. There is a need for transmedial narratology, which should focus on the possible forms of the narra-

Table 5. The composite model of narrative definition

	SIGNIFIED	**SIGNIFIER**
SUBSTANCE	• world • main character • events • goal challenges on the level of content, i.e., in the fictional reality	• narrative stimuli that result in the mental image or cognitive construction of story • witnessing
FORM	• story as a complex system of facts • story as a mental model containing its requirements, i.e., constructions of the substance components of story	the multimodal discourse of a game, requiring both interpretative and constructive participation from the player

tive stimuli (e.g., Ryan, 2003). The multimodal qualities of computer games should be more effectively emphasized. Additionally, existing theory related to narrative structures should be further developed with the aid of cognitive science, so that the language-based approach would not dominate to such an extent. Although Ryan (2004) states that language seems to be the best semantic system for narrative because of its ability to present propositions, in our approach, the verbalization of narrative relations can happen on the level of the co-storyliner. Theories related to game mechanics, player's selecting possibilities, and progression in game, could also inform game design.

FUTURE RESEARCH DIRECTIONS: A PROPOSED NARRATIVE DEFINITION AND THE NEEDS OF NARRATIVE SERIOUS GAMES DESIGN

In this section, the consequences of the analysis results are discussed from the viewpoint of serious games design. If the purpose is to build an enchanting game narrative so that it supports learning and related operations, some psychological theories (with psychoanalytical or cognitive-based narrative definitions) addressing narrative may prove helpful. But this alone is not enough, as there are several simultaneous requirements of a successful serious game. A combination of requirements includes the needs of narrative design, game design and learning tool design.

From the viewpoint of narrative definition utilized in game design, the question remains; is the proposed cognitive–narratological definition (the composite model, see Table 5) for the purposes of game narrative design compatible with the narrative definition evoked by the psychological theory selected for enhancing learning purposes? Two potentially applicable psychological viewpoints may come from David Herman and Jerome Bruner. Previously, Herman's viewpoint of narrative as an artifact which may enhance cognition was discussed. According to Herman (2003), narrative can serve as a tool for problem solving. One special characteristic of narrative is its ability to "establish spatiotemporal links between regions of experience and between objects contained in those regions" (p. 169). This approach to narrative is strongly rooted in cognitive psychology, and it also seems to be compatible with the proposed narrative definition. While Herman discusses the nature of cognitive artifacts and their use, he quotes Don Norman:

The powers of cognition come from abstraction and representation: the ability to represent perceptions, experiences, and thoughts in some medium other than that in which they have occurred, abstracted away from irrelevant details... . we can make marks or symbols that represent something else and then do our reasoning by using those marks. (Herman, 2003, p. 167)

This does not conflict with de Saussure's conception of sign, which represents something that is absent. Thus, the approach of cognitive artifacts could be compatible also with the structuralist viewpoint. At least, their connection would be worth closer observation.

Bruner (1986) argues that in human beings' cognitive functioning, there are two modes of thinking that produce different constructions of reality and experience. The modes are *paradigmatic* and *narrative* thinking. The paradigmatic, also named logico-scientific, mode of thinking uses mathematical devices in describing or explaining contents. The narrative mode approaches content in a different way. In several books, Bruner discusses human beings' universal ability to use narrative to construct a conception of reality, ourselves, and our powers. Bruner (1996) states that culture shapes minds. It provides a narrative mode by which its members can receive their identity and agency.

Bruner's (1996) conception of knowledge is networklike. He says that "[w]hen we understand

something, we understand it as an exemplar of a broader conceptual principle or theory" (Bruner, 1996, XII). Thus, according to Bruner (1996), for the learner it is better that knowledge is gained through his/her own cognitive efforts, as it will thereby be internalized and utilized together with the learner's previous knowledge.

Bruner's conception of knowledge seems to be compatible with the cognitive view of narrative as a system of facts, or more generally, as a mental model or tool. His view of narrative however, is not only cognitive, but also psycho-cultural as he describes it (Bruner, 1996). Bruner mentions Freud as one of the influential persons in the growth of the psychological approach to narrative that he himself also represents. "We live in a sea of stories, like the fish who [.. .] will be the last to discover water, we have our own difficulties grasping what it is like to swim in stories" (p. 147). Here, Bruner refers to the automaticity of the use of narrative mode in cognition.

In many places Bruner's ideas relate to issues which in Ryan's division would be described as *including narrativity* but not necessary *being narratives*. This may limit straight application of his theory in narrative learning tool design. At least in the first place, the concepts related to a player's (narrative) expression should be clearly defined and separated from game narrative definition.

In serious game design, one should not overlook the communicative potential of fully adopted narrative structure, despite its apparent complexity. Character-to-character communication, narrator-to-narratee communication, and author-to-audience communication levels, with the additional rhetorical twists of short-circuiting these levels (e.g., a character addressing the narrator) offer vast heuristic value for serious game design. The same can be said of the numerous other features of narratological theories, such as the filtering of information mediated (focalization), which are not even hinted at in the current game design books. Not all games need to be narrative in nature, but for many serious gaming purposes, the narrative form offers invaluable features that cannot be fully employed without some level of narratological knowledge. Those game design books that explicitly discuss narrative game design would serve their audience better by incorporating such concepts and their applications in the design process. But, of course, this may require additional advances in the field of game narrative research, especially related to the form of game narrative expression.

CONCLUSION

In this chapter, we have considered different narrative definitions discovered in the analysis of nine present-day computer game design guidebooks. In the research material, three different narrative theory bases were utilized. Moreover, a psychoanalytical definition arose from the analysis. Throughout the discussion, significant consequences of different and varied theoretical bases of definitions have appeared. The consequences include disruptive factors and unclarity for design-related discussion, as well as misleading assumptions of the possibilities of game narratives. One regrettable consequence is that, because of the very different definitions of narrative and its related concepts, various ideas of separate designers remain noncomparable, and thus further development of the ideas becomes difficult.

Therefore, to help the progress of the game narrative discussion, we have proposed three necessary levels of game narrative that should be distinguished and clearly named. Based on the research results (the functional narrative definitions) and the needs set by the three above-mentioned levels, we have built a composite model of narrative definition that should be extensive enough for game narrative design purposes. As one new concept, we have proposed the concept of the co-storyliner, referring to the player's role in the computer game from the narrative viewpoint.

For further study, we propose various needs that rise from the research results. First, concerning the three aforesaid levels of narrative, especially the level of playing experience that when viewed from the psychoanalytical-based perspective can take the form of narrative in the player's mind, should be separated by distinct concepts from narrative that designers are pursuing by fixed or potential-based narrative design style. Furthermore, we highlighted the directions where the theorization related to game narrative design should be elaborated in the future. The propositions included, above all, the need for transmedial narratology, which should focus on the possible forms of narrative stimuli, and further development of existing theory related to narrative structures with the aid of cognitive science. In this context, the use of the concept of linearity (when related to game narrative) should additionally be clarified.

The notions of this chapter are not only noteworthy for game designers, but also for game design researchers. Narrative definitions and their consequences could be further analyzed in the future in the context of research papers. In this kind of analysis, the papers discussing narrative serious games design would constitute highly interesting research material. For example, the approaches of Dickey (2006) and Egenfeldt-Nielsen (2006) utilize different narrative definitions and thus yield highly different comments on the possibility of game narratives in educational game design. This goes to show the importance of rigorous definitions of concepts, especially in multidisciplinary contexts, as is often the case with narratives.

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ENDNOTE

[1] The choice of concept is confusing, as in the context of narrative theories, Aristotle's use of mythos ("plot") is better-known.

II

NARRATIVE CONSTITUTION FOR INSTRUCTIONAL GAME DESIGN: THE SEMIOTIC-COGNITIVE MODEL OF NARRATIVE.

by

Sanna-Mari Äyrämö, 2017

Accepted in Journal of Storyworlds: A Journal of Narrative Studies.

III

LEARNING BETWEEN RULES AND NARRATIVE: PLAYER'S MEANING NEGOTIATIONS ANALYZED, DESIGNED, AND ASSESSED

by

Sanna-Mari Äyrämö, 2015

Proceedings of the 9th European Conference on Games Based Learning. ECGBL 2015. Nord-Trondelag University College Steinkjer Norway. 8-9 October 2015. Robin Munkvold and Line Kolås (eds.). pp.631-637.

Learning between Rules and Narrative: Player's Meaning Negotiations Analyzed, Designed, and Assessed

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Abstract

Keywords/-phrases: narrative, game rules, learning, serious game design

It has been recently noted that there is a special need for research on the particulars of learning and serious game design. The aim of this study is to examine how mutually different learning objectives, game narrative design, and game rules can be combined by various ways**.** There can be multiple roles for the player in narrative serious and learning games, including the roles of the game player, learner, narrator, or story character. Depending on design decisions of a game at issue, the player may be moving between different roles during the game playing and as an intentional actor s/he has to conduct multiple meaning negotiations between different types of game rules and narrative elements perceived during the game playing. The player's role and the abovementioned operations are discussed in this article as *co-storyliner's meaning negotiations*. It is assumed that, in narratively rich games, the design decisions governing the co-storyliner's meaning negotiations play a central role regarding what is finally to be learned through the game playing. The author proposes an analysis and design framework called *the Design Space for Instructional Game Narrative* (DSIGN), which helps researchers specify and hermeneutically analyze the design space between various types of game rules and semiotic-cognitive areas of narrative design. Thereby, the mechanisms by which various games create meanings can be understood more closely and compared to the explicitly stated learning objectives of the games. The utilization of the framework is demonstrated by presenting brief learning game analyses using a hermeneutic approach, which highlights player's interpretations, or *readings*, of game and narrative-related representations and situations. The presented analyses illustrate how the applied framework can aid to specify the potential-based design by which the player-learner's cognitive processes are aimed to be steered through the crossroads of game narrative and rules. For conclusions, it is discussed how the DSIGN model could be applied as a guiding tool for serious and learning game design and assessment.

1 Introduction

It has been recently noted on the field of serious game research that *how*-oriented questions focusing on game design are especially necessary (Clark, Tanner-Smith and Killingsworth 2014). The focus of this article is on how game narrative design can intersect with game rules, and thereby affect the player's process of constructing meanings during the game playing. Even if some previous studies consider instructional potentials in the *game narrative* design (for example, Dickey 2006 on adventure games), in educational or instructional context narrative is mainly considered as in traditional storytelling media forms.

In the present study, it is assumed that in story-driven game genres high-quality narrative design supports the inherent learning of game playing. This could be achieved by creating meaningful links between different game rules and the areas of narrative design. I am going to describe a model called *the Design Space for Instructional Game Narrative* (DSIGN), by which I specify the possibilities to create such linkages, and thereby support player's learning through game narrative design. I am going to present samples from broader analyses, which focused on award-winning[1] narrative learning games, namely *Global Conflicts: El Patron*, *Mission US: A Cheyenne Odyssey* and *School of Dragon* (more information about the awards of the games can be found from their respective homepages).

In each three example games, *Global Conflicts: El Patron* (*GC:EP*), *Mission US: A Cheyenne Odyssey* (*MUS:ACO*), and *School of Dragon* (*SoD*), the explicitly declared learning object concerns enhancing students' understanding on complicated topics, such as historical knowledge (*MUS:ACO* and *GC:EP*), abstract phenomena of social sciences, such as international affairs, corruption, and social inequity (*GC:EP*), or subjects of sciences, such as motion and forces (physical science), ecosystem (life science), and water system (earth science). The learning objectives include factual and conceptual knowledge. Besides, all the three games set a learning objective of understanding and applying some procedural knowledge, such as successfully implementing scientific method and conducting scientific experiments (*SoD*), successfully applying interview skills and principles (*GC:EP*), developing and applying historical empathy (*MUS:ACO*), using history-related knowledge and understanding in order to explain the present situation (*GC:EP*) or understanding present-day

values (*MUS:ACO*). In *SoD* there is, besides, an especial ambition to encourage children to examine things, pose questions, and – enjoy learning.

2 Agency and Opportunities for Learning

When concerning, how meanings can be created by game narrative design, the concept of 'agency' comes up. According to *Routledge Encyclopedia of Narrative Theory* (2005) "[c]entral to agency are the questions: what is an action (versus an *'event', a 'happening' or a 'state') [- -]? Whose action is it (including who can be held responsible for it)? Is it meaningful and morally 'good' or 'bad'?" (9). In the context of digital software design agency is closely linked to user's goals and plans, which are the resources for her actions. Wardrip-Fruin (2009) describes agency exemplifying it by SimCity as: "a process designed to transition players, through experimentation and feedback, from their initial assumptions to an understanding of its procedural city" (345).
Tanenbaum and Tanenbaum (2009) have proposed that especially when game playing and a story intersect, agency could be viewed as a commitment to meanings. By the commitment-part of their definition Tanenbaum and Tanenbaum (2009) mean player-performer's improvisation within a game story, and as it has to take place through a system largely determined by the game designer, the commitment is further considered as a conversation between the player and the designer, conducted via game story. The meaning-part of the definition foregrounds the player's intents, which underlies her choices. Thus, it is suggested that "game designers should strive to create game and narrative experiences in which the player can demonstrate commitment to the experience, and, crucially, where that meaningful commitment is reinforced by the game's behavior" (Tanenbaum and Tanenbaum 2009, unnumbered).
Just like constructive learning process requires learners to actively engage in the constructing of meanings via various activities, agency in games includes the player's goals, plans and intentions, which – using the Wardrip-Fruin's (2009) definition – take the player through experimentation and feedback, from their initial assumptions to an understanding of the procedural subject. Furthermore, the goals, plans and intentions created in shape of the player's story-related improvisation, which is demonstrated in terms of the system, could be considered as a certain type of commitment to meaning.

3 Narrative and Game Rules: The Design Space for Instructional Game Narrative

With the Semiotic-Cognitive Model of Narrative narrative is seen to be constructed by the designer and the recipient through a continuous reflection between four constitutive areas (Äyrämö, *forthcoming*). The first two areas are the Story Components, which comprise the fictional reality, and a Story as a Complex System of Facts, which is considered as a structure of functions (an approach originating from Propp's, 1928/1968, pioneering work). The rest two areas are the cognitive Response to Narrative Stimuli, which are our mental pictures created cognitively of the contents, and the Material Representation and Multimodal Discourse, which is the only material and perceptible of a narrative work.
Narrative digital games – applying various types of game rules – are especially capable to foreground the above-described narrative areas on unique ways. Generally, the processes of narrative meaning making include the recipient's perception and inspection of the material representation and multimodal discourse. The successful perception results as mental images constructed in the recipient's mind. This as a whole is considered to comprise the narrative signifier. The signified-part, likewise, is considered as twofold. First, there is the fictional reality created of certain minimum components (the world, the objects, the character(s), the events, the goal(s), the challenges, and the emotional reality). On the area of the Story Components the recipient keeps on eye especially the orders of *internal logic* of the story. To raise plausibility and engagement the story must, above all, be faithful to itself. Moreover, the logic on this area governs how the recipient completes the gaps of narration with her existing knowledge. Furthermore, in order to interpret narrative meanings, the recipient judges the story contents relative to their significance for the overall course of events in the story. This is when the recipient starts to construct narrative on the second semiotic level of functions, where some of the contents are more important and others are rather supplementary. Furthermore, when recognized as functional structures, the story contents can constructed by the recipient as second stage meanings or connotations, instead of mere denotations.
Ang (2006) proposes four types of game rules that frame digital game playing: the symbolic and the semantic paidea rules, and the extrinsic and the intrinsic ludus rules. Firstly, the extrinsic ludus rules explicitly form the player's main goal in a game. The symbolic paidea rules practically dictate what the player can do and what not. Furthermore, these rules govern the relationship between physical and virtual actions. The semantic paidea rules settle how the virtual world responds to player's actions. Finally, the intrinsic ludus rules govern how the main goal can be reached. The intrinsic ludus rules may be explicitly told, but, as often in digital games, may also be discovered by the player along the game playing.

The connections between the narrative areas and the rule types result in variation of player's speculations and meaning negotiations. If player's learning can be supported by game narrative design, then those speculations and meaning negotiations should be essential for the learning process. The DSIGN model (Table 1) sets Ang's game rule types and the areas of Semiotic-Cognitive Model of Narrative to intersect. Next, the totality of the 16 cells of the DSIGN model is specified and illustrated using samples from three learning game analyses.

The Area of Semiotic-Cognitive Model of Narrative/ Ang's rule type	*Extrinsic Ludus Rules*	*Intrinsic Ludus Rules*	*Symbolic Paidea Rules*	*Semantic Paidea Rules*
The Story Components (signified)	1	4	2	3
Complex System of Facts (signified)	5	8	6	7
Response to Narrative Stimuli (signifier)	9	12	10	11
Material Representation and Multimodal Discourse (signifier)	13	16	14	15

Table 1 The DSIGN model. Numbers in the cells indicate the order of discussion in the next chapter.

4 Player's Focus on the Intersections

The description proceeds from a general game goal (the extrinsic ludus rules) to what the player is able to do (the symbolic paidea rules), to the system responses (the semantic paidea rules), and finally, what appears to be efficient or even the best way to achieve the game goal (intrinsic ludus rules). Next I go through all the four areas of narrative, and describe what the player's ponderings on each areas are concerning during game playing. This does not mean that all players would focus on every type of ponderings or meaning negotiations along the actual game playing and in every game – just like readers do not leave a novel with same kind of interpretations or reading experience.

The Story Components the extrinsic ludus rules (1) direct the player to note what she as a fictional character *should aim to do*. Usually the player gets the picture from the more or less extensive backstory. In *GC:EP*, the player is a journalist who arrives on a conflict area and strives to find out and understand what has happened, what are the parties' perceptions, or stories, about the bygone events and the current situation. In the end-part of the game, the journalist uses the gained knowledge in the form of arguments in a final interview, where she has to use arguments to rouse stress in the interviewee (who represents the ruling group, and has motivation to deny unpleasant facts). In *MUS:ACO*, the player follows the story events from young Cheyenne Indian boy's perspective and makes decisions related to his actions and lines of dialog. The target is to witness several events of the character's life and see, how the decisions made earlier inflect the last events of the story. In *SoD*, the player, as a Viking student, strives to become an ultimate dragon trainer in a Viking themed virtual world.

In connection to the symbolic paidea rules, in the context of the Story Components (2) the player explores the scope of action regarding her role in the story. In the case of *GC:EP*, player can choose the subject of the questions presented to the non-player-characters (NPCs), walk between interviewees, and take a taxi to the more distant locations. Besides, she can read articles from the computer in a library. Additionally, the player can study her (automatically saved) notes, background information and her assignment. In the final interview, player presents questions and is able to set arguments when NPCs heartbeat sound is heard. In *MUS:ACO* player can choose an action or dialog line from the offered alternatives, and at certain points, she can choose between several target locations on the map. In *SoD* the player can conduct tasks like fishing, growing up plants, taking care of diverse animals and doing favors for other Vikings (by, mainly, collecting objects and running from character to character), and conducting experiments in the lab of chemistry. Additionally, there are tasks related to taking care of dragons and practicing the flying (and shooting) by them. From tasks the player earns virtual currency, by which new animals, seeds, dragon eggs or customize-related stuffs can be bought. Additionally, along with her advancement, player can study science-related summaries from the Adventurer's Journal.

The player's observations regarding the Story Components governed by the semantic paidea rules (3) are about the consequences of her actions for the objects and characters of the story world, including the player character (PC). Furthermore, the consequences on narrator-PC may touch the narrative perspective and PC's motivation as well, and thereby give reasons on changes on symbolic paidea rules. In *GC:EP* talking to particular NPC may cause new questions to become available to the PC's awareness and reveal the possibility to get further information from the same or another NPC. In *MUS:ACO* the branches chosen mean that certain traits, skills or values are actualized. Besides, there are sometimes impacts to the immediate story events, or personal "micro" level of the story, while the worldwide "macro" level is fixed. Finally, during the end-part of the story, according to player's previous choices, some alternative options of actions are available for the PC, while some others are not, since the PC's previous choices of life do not support them. In *SoD* completing the favors and other tasks raises the PC's experience points and property, and brings new objects and tasks available, while also the preceding tasks are available.

On the area of the Story Components the player's ponderings governed by the intrinsic ludus rules (4) concern the mode, which should be adopted in order to successfully move on in the game while being empathized in the PC's role. For example, in *GC:EP* the player may be pondering especially what kind of topics to prioritize in the interviews, as the player does not have time to present all the questions available.

Regarding A Story as a Complex System of Facts the extrinsic ludus rules (5) are about the involvement type the player must adopt. According to Ryan (2004) the player involvement can represent internal or external types, or something between. In the case of internal involvement, the user situates herself in the fictional world, whereas in external involvement the user situates herself outside the fictional world in the god-like position. In all example games discussed in this article the internal type of involvement plays important role in the player experience, whereas new through-playings in *GC:EP* and *MUS:ACO* may move the player involvement towards more external type.

In the context of A Story as a Complex System of Facts, the symbolic paidea rules (6) are about how the player can govern the story events, whereas the semantic paidea rules (7) move the player's focus on how her choices impact on the totality of the story structure and plotting. On other words, as a co-storyliner, the player may strive to intrigue the course of action apart from the PC's objectives. For example, in new through-playings of *MUS:ACO* the player may select a novel alternative in order to achieve particular consequences, or simply out of curiosity.

The intrinsic ludus rules –related player ponderings on this context (8) concern how the player must deal with the narrative in order to successfully play the game. This is about player's game and narrative –related literacy skills, which include informed choices that effect on her media reading and narrative interpretations. The player may utilize her previous knowledge related to adventure game or role-playing-game genre conventions to construct hypotheses. Besides, the player may apply her previous knowledge of particular narrative genres, for example, in *GC:EP* relevant narrative genre could be detective stories. The recognition of relevant genres guides the player to focus on appropriate meaning negotiations on other areas of the DSIGN model.

The intersection between the Response to Narrative Stimuli and the extrinsic ludus rules (9) is about the player's mental pictures, expectations and conceptions regarding the main goal of the game. Likewise, symbolic paidea rules –related player's responses to narrative stimuli (10) are about her mental pictures, expectations and assumptions on what she is capable to do in the game story. These expectations may be based on the player's previous knowledge related to the subject matter of the game, or, they may arose from the previous experiences on narrative or game genres considered relevant by the player (see the case 8 described in the previous paragraph). Furthermore, the semantic paidea rules in this context (11) are about player's mental pictures, expectations and interpretations regarding the reactions of the virtual world.

Further, the player creates story-related mental pictures, expectations and situated plans of particular actions leading to success. This is the intersection between the Response to Narrative Stimuli and the intrinsic ludus rules (12). The design decisions can foreground particular manner of choices simply by naming the alternatives, as in *MUS:ACO* the Cheyenne values are familiarized using the badges of bravery, wisdom, and generosity to characterize particular selections of PC-actions. It is significant that the player's perceptions and expectations must at least slightly be a subject of change over narrative progression and game playing – otherwise the experience is absolutely boring.

In *SoD* the player's initial assumptions may be, for example, that there will be many scientific facts –related tests in the game. However, actual game playing creates mental pictures of flowing performing of manifold tasks, chemical experiments and taking care of multiple living things. At the same time the NPC's dialog lines confirm a positive feel of PC's skillfulness, diligence and solicitude. Especially farming and dragon training projects tied up with the passage of real time tempts the player to return the game repeatedly during long time spans. The regular returning, then, further deepens the player's commitment on the meanings of the

game narrative. The larger bodies of knowledge (such as physical science, life science, earth science and especially, and scientific method) are introduced through NPC dialog lines in pursuance of player's bustling among various tasks or favors for other Vikings, and are thereby connected to hands-on situations – and to player's previous knowledge and experiences of similar real-world-situations. Finally, the game constructs an experience of enjoyable continuous learning without disturbing fears of being mistaken. As a Viking NPC called Hiccup says: "I had to adjust my theory on the fly when my testing showed it was false. But that's okay. All data we learn can help us get closer to the true answer!" Above all, the game narrative design alters the initial assumptions of tedious cramming for unpleasant tests into an atmosphere of passion for experimenting and learning new things.

On the area of Material Representation and Multimodal Discourse the player's observations regarding the extrinsic ludus rules (13) are about how the main goal is expressed in the game context. The player's considerations through the symbolic paidea rules on this context (14) concern whether an element on the representation is a savor of a chance to interact. In this connection, the designer has to decide, how the scope of actions is hinted and revealed to the player, how are various operations split on steps, and what qualities of activities are represent in the interaction design. For example, growing plants and vegetables in SoD comprises of the following steps: buying the seeds, planting the seeds, watering the seedlings, waiting given (real) time – the time is of different length with different plants – (or skipping this step with virtual currency) and, finally, harvesting in given (real) time limit, or, if missed, reviving wilted plants (with virtual currency), or collecting the plants to compost heap. Each action is fulfilled by a click – a simplified design decision, which highlights the step-structure of the procedure.

The player's approach on the area of Material Representation and Multimodal Discourse governed by the semantic paidea rules (15) is about how the narrative-related causalities of the virtual environment are expressed. As described by Wardrip-Fruin (2009) narrative-related causalities (and other intelligent impressions) created through interaction with a software may be hidden from user's eye, or, on the other hand, there may be an impression of intelligence hoaxing the player to believe on greater complexity of intelligence of the software than there actually is. What the player can speculate largely depends on how the output is represented using the vide variety of the digital multimodal means of expression. In digital games the possibilities encompass the expressional conventions of any imaginable preceding media form. The player's intrinsic ludus rule –related meaning negotiations (16) in the context of narrative representation and discourse are about if the usefulness and effectiveness of a particular action are contextual for story events, and not only for the game context. The currency and the shop in *SoD* offer here an example, which is more contextual for the story than a plain point system would be.

5 Discussion

It has been demonstrated above, how narrative and game rules can combine in various ways creating rooms for *co-storyliner's meaning negotiations* regarding narrative and game agency. The negotiations concern, especially, what can be done, who can do it, what is the meaning of that action for game playing and narrative contexts, and furthermore, how are those contextualized meanings reflecting with player's foreknowledge. In instructional game narrative design, separate cells of the DSIGN model can play different roles. Basing on the preceding section of the article, couple of regularities can be preliminarily proposed (see a summary in Table 2).

If the player aims to success and find out the intrinsic ludus rules of a game, she conducts experiments within the limits of symbolic paidea rules and reasons on the strength of the feedback gained through semantic paidea rules. Thus, the columns of symbolic and semantic paidea rules cover the creation of fortunate circumstances for learning: factual and conceptual knowledge related to the learning objective broken down and, perhaps, situated on a larger context. In narrative games the fictional world offers that context. It is created by the story components: characters, locations, and objects including the related attributes. Besides, there must be events on both physical and emotional realms. On the area of A Story as a Complex System of Facts (especially on the cell 7) the design decisions can reveal designer's more profound view on the topic. In *SoD* the player's actions result almost inevitably as PC's development, and development leads to significant diversity of the scope for action – this could be seen as an analogical view to learning – remember what Hiccup said about false theories!

The desires, goals and plans related to player agency are not necessarily the same as the main goal of the game presented in extrinsic ludus rules, but the ones formulated by the player as *a co-storyliner*. Regarding the most effective placing of learning objectives, which involve understanding and application of procedural knowledge, the row of Response to Narrative Stimuli and the column of intrinsic ludus rules seem to be the most important areas of design. Besides, the learning objectives can be situated on the story world (the cell 4),

as in *GC:EP* regarding the procedure of interviewing. Besides, the designer must take into account what the game requires from its players regarding various literacy skills (the cell 8) bearing in mind also the target group's expected cultural foreknowledge and narrative competence. Furthermore, the potential-based narrative design must be created so that, when the player infers intrinsic ludus rules together with creating mental pictures of the story contents, the design decisions regarding the combination of the two (the cell 12) clarifies the key points of the procedural learning objective. The designer's concrete tools for directing and delimiting player's observation regarding intrinsic ludus rules belong on the area of Material Representation and Multimodal Discourse (the cell 16), but to use the means of multimodal discourse effectively, the intended experience (on the cell 12) have to be worked out beforehand or in tandem.

Finally, on the column of extrinsic ludus rules, narrative design is largely characterized by the designer's approach to learning (on the cell 1), which determines the foundations for the pedagogical script created through symbolic and semantic paidea rules. The player's involvement type (on the cell 5) depends, firstly, on what is the role of empathy in the designer's learning approach, and secondly, on the (designer's view of the) characteristics of learning objection. Besides, the formation of extrinsic ludus rules indicates some generalized arguments or assumptions regarding the learning object (on the cell 9). Moreover, the situation where the extrinstic ludus rules are expressed (the cell 13) is usually also the situation, where the player creates the first expectations regarding the game playing, narrative and the subject matter.

The Area of Semiotic-Cognitive Model of Narrative/ Ang's rule type	*Extrinsic Ludus Rules*	*Intrinsic Ludus Rules*	*Symbolic Paidea Rules*	*Semantic Paidea Rules*
The Story Components (signified)	Approach to Learning	Learning objective as a course of action	Learning objective broken down into story components (factual and conceptual knowledge)	Attributes related to learning objective
Complex System of Facts (signified)	Involvement type: The foundations for pedagogical script	Cultural and media -related foreknowledge and skills	Fortunate circumstances for learning	Profound (meta stage) view of the nature of the subject
Response to Narrative Stimuli (signifier)	Generalized argument about the subject of learning objective	Key points of learning objective (procedural knowledge)	Learning objective as a change of player assumptions	What kind of questions the student should be asking from herself regarding the learning objectives?
Material Representation and Multimodal Discourse (signifier)	How the player is informed about the main goal? What kind of expectations are intended to rouse?	Steering the player's observation on the essentials. Introducing abstract concepts utilizing game elements.	How actions are represented (metonymical choices). Sensory-choices (media-form - related choices)	Representation of the sphere of actions (metonymical choices)

Table 2 The DSIGN model completed with the viewpoints, which guide the learning game design in each cell.

Large amount of player's speculations during game playing concern agency, and in narrative games, it is agency over elements of fictional reality of game narrative (internal involvement of the player), plotting the story (external involvement of the player), or both. Tanenbaum and Tanenbaum (2009) defined agency as commitment to meanings, were commitment meant "a conversation between the player and the designer, conducted via game story" (unnumbered) and 'meanings' pointed out to "the player's intents, which underlies her choices" (ibid). Basing on what has been specified through the DSIGN model, player's intents in narrative learning games can be further seen as learners' active engagement in constructing meanings via her dialogic activities, in accordance with the view of constructivist learning. Besides, in form of the DSIGN model, I have now proposed a guideline for instructional game narrative design, analysis and assessment.

6 Conclusions

The DSIGN model could be applicable on several purposes, including design, analysis and assessment of learning games. The model can structure hermeneutic-interpretative analysis focusing on how meanings are created through game narrative design. Besides, the proposed approach can guide learning game designers to better situate the learning objective and the principles of instructional design and educational thinking, and more generally, to more effectively utilize meaningful relationships between game rules and narrative design. Moreover, analyses applying the proposed model may also strengthen the assessment process of existing learning games. When thoroughly game analysis is conducted, it can be reviewed, if the player's meaning negotiations on various cells of the model meet the explicitly told learning objectives.
In future, still more analyses should be conducted with DSIGN model for narrative learning games to verify the regularities of instructional game narrative design.

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IV

HOW TO ANALYZE GAME NARRATIVE FOR ASSESSING LEARNING GAME DESIGN AGAINST THE LEARNING OBJECTIVE.

by

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Submitted to Human Technology Journal in November 2016.