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That Crazy World We'll Live In – Emotions and Anticipations of Radical Future Technology Design

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Abstract

Humans behave and experience technological design in conflicting and contradictory ways. On the one hand, the very mention of the word 'future' conjures expectations of the radically new and unexpected. On the other hand, previous research has shown that people have a threshold level of change and the unexpected that they can cope with. Their expectations are dominated by mental images of familiar associations with what has been previously associated with the future. As a rule, humans cope with incremental changes, yet have difficulty accepting the entirely unfamiliar. This makes it harder to imagine a future of radical technology design and interactions, particularly when attempting to predict possible emotional outcomes. This chapter describes the emotional balance between the familiar and the unfamiliar in design creations, which has also been observed in theories such as the Most Advanced Yet Acceptable (MAYA) theory. The MAYA theory emphasises the complexity and irony of incremental versus radical changes in renewing design language and technological systems for the future. By carefully observing classical cases of previous game-changing technological innovations, including their hype and acceptance curves, a model is proposed that illustrates how a radical design future may be achieved by tapping into emotional, ideological and interactive logic, rather than formalistic (material-based) design choices. The chapter highlights the role that culture and cultural discourse play in cognition and emotions when considering future technology design in terms of 'thinking outside the box'.

Keywords: Emotions; Futurism anticipation; future technology design; MAYA; madness

Let's break out of the horrible shell of wisdom and throw ourselves like pride-ripened fruit into the wide, contorted mouth of the wind! Let's give ourselves utterly to the Unknown, not in desperation but only to replenish the deep wells of the Absurd!

(Marinetti 1909[2016], 1)

1. Introduction – We Know the Robots Are Coming

The past has occurred, the present is happening and the future is waiting to unfold. The inevitable unknown may conjure images of a systemic heaven or technological hell, depending on how the subject is framed. While the future is often thought of as unknown, radical, troubled or different, it is not known how it is anticipated and imagined. That is, knowingly or unknowingly, individuals hold a socially and culturally constructed stylised idea of what the future will look like (Inayatullah 1990) – and perhaps even feel, smell, sound and taste like. The future holds a design language of its own. Strong emotions are also associated with the design language of future representations. The emotional qualities of

futuristic design and technologies are highly dependent on context and associations that are continually emphasised through popular culture and politics.

The notion of 'futuristic' design conjures images of the iconic spaces and structures imagined by the great architect Eero Saarinen, who designed New York City's JFK airport, with its spacecraft-like wing-shaped roof, and the 192 meter high stainless steel Gateway Arch in St Louis, Missouri, is the tallest in the world (National Park Service 2010). Certain aspects of his style have been adopted by modernist designers such as Ludwig Mies van der Rohe and Walter Gropius, and the International Style in general (Art Story Foundation 2019). Other sources of inspiration in Saarinen's work can be traced back to 16th century Vicenza, if not directly to the designs of the period, indirectly through other architects, artists and designers who were influenced by the forms of the era. Perhaps contrary to the chapter's opening quote extracted from the Futurist Manifesto (Marinetti 1909[2016]), Saarinen described the purpose of architecture as sheltering and enhancing "man's life on earth and to fulfil his belief in the nobility of his existence" (cited in Central Intelligence Agency 2017). French dramatist Eugène Ionesco (1957) described the 'absurd' as "devoid of purpose… Cut off from his religious, metaphysical, and transcendental roots, man is lost; all his actions become senseless, absurd, useless" (cited in Esslin 2009, 23) Saarinen's work serves a physical and existential purpose. His design language provided spatial effects that protected people from the effects of existing in an ever more complicated modern world (Art Story Foundation 2019).

Thus, based on the sensibilities of work by architects such as Saarinen, the aesthetic language of future design may be observed in smooth shiny curvaceous objects, gadgets, transportation and architecture. On this basis, design psychology theories such as the Most Advanced Yet Acceptable (MAYA, Hekkert et al. 2003; Baha et al. 2012) and scholarship on design typicality (Mayer and Landwehr 2018) argue that people are inclined to emotionally and aesthetically prefer prototypical designs (even of the unknown or supposed 'new') over atypical designs (Graf and Landwehr 2017; Hekkert et al. 2003; Veryzer and Hutchinson 1998). Thus, the technological future is typified by what people already understand to be the future. Minimalism plays a major role in 'future aesthetics', or the 'aesthetics of the new', with striking white spaces and transparency mitigated through an abundance of glass, steel and controlled colour palettes (Macarthur 2002).

On an immaterial level, the notion of 'future' appeals to a range of emotions, connected to both utopian and dystopian visions and typified by a compound of cognitive–emotional processes that derive from individuals existing in perceived uncertainty. There is almost never one without the other. For while Saarinen's creations form the basis of imagining a safe, clean and organised future, the rationale behind them is to protect people from the futuristic technological mess they have created. Thus, there is a sense of *human technology* – designing technology that protects and promulgates human values. Given the schizophrenic nature of the imagined technological future, this chapter seeks to achieve two main goals. First, it argues that the future of so-called radical technological design is already known and has been developed incrementally over the centuries. Thus, people's notions and expectations of the future are already set in a pattern of futuristic aesthetics to which designers are expected to aspire for years to come.

Second, the chapter explores a technologically driven human side, characterised by madness or craziness (deviations from so-called typical mental activity) that is coupled by emotions associated with the future. The Futurist cultural movement established during the early 1900s is described in relation to its radical and somewhat untamed discourse on the future. Futurism could be said to explicitly reject the human-centred ideologies of Modernist architects such as Saarinen. Certainly, the mindset that Futurism promulgated could be described as counter to the research claims made in relation to theories such as MAYA. Futurism was fuelled by rebellion, and thus charged with aroused emotions that were then mobilised for cultural, social and political propagandist purposes. Futurism was not only about immaterial sentiments about the future; rather, it was interwoven with technology, human relationships to technology and a deliberate instrumentalisation of madness – once again representing a break with a temporal and/or nostalgic tradition of norms. Futurism was an attempt to move unguarded, yet not vulnerably, towards an unknown future. These insights are significant when reflected against recent trends in design research that have observed the dynamics between user-centred design and the design imagination (design intention).

As Mattelmäki et al. (2014, 73) point out, there is an 'empathy trap' in which designers are too concerned about the information users are explicitly offering, which more often than not resonates with the design typicality of various technology types and spatio-temporal contexts. This ignores the

potential of what the designer's imagination has to offer regarding future design directions. Overcoming bottlenecks in design thinking is crucial when disrupting norms in design language, trends, processes and innovation. Thus, "[i]f designers are not vigilant, the attempt to be empathic might articulate popular reflections instead of innovating more radical futures" (Mattelmäki et al. 2014, 73).

2. Futurism

The Futurist cultural movement focused on capturing and expressing new ways of experiencing the world that rapid technological developments afforded (Dominiczak 2013). This has been described in terms of representing the 'new face' of the world as seen in relation to (and through) emerging technologies (Bell 2007; Gualdoni 2009). The significant cultural products produced in the Futurist movement were verbal manifestos. Thus, language and the symbolic poetry of Futurist pioneer Filippo Tommaso Marinetti were the technologies Futurists relied on to construct emotional images of the future. At the heart of Futurism was a fascination with technology, science, machines and movement (Dominiczak 2013).

The emotions portrayed and constructed in the Futurists' cultural rhetoric were driven by Marinetti's own emotional experience of Italian culture. Futurist rhetoric featured an aggressive emotional quality that promulgated the beauty of speed as well as a desire for human aggression through technological warfare (Dominiczak 2013; Marinetti 1909/2016). This is not surprising, given Marinetti support for Mussolini's fascist regime. Thus, technology, emotions and culture were tightly interlinked and operationalised for political and warfare purposes. To instil the emotions associated with culture, cultural products and more traditional cultural technology museums, for instance, were deemed 'vicious' (Boccioni 2011; Boccioni et al. 1882-1962/1992).

The Futurist approach to science and technology was that of societal transformation. Moreover, technological objects were viewed in terms of their unity with the surrounding environment. Intensively masculine driven, Boccioni used the term 'interpenetration' in 1910 (cited in Harrison et al. 1993) to describe how science was providing the technological input to produce objects (and systems) to better serve people's material and intellectual needs. From the perspective of cognitive science, technology can be seen to be intrinsically connected with cognition and the development and expression of human

thought – what Shaffer and Clinton (2006) have called 'toolforthoughts'. Technology can be considered an expression and embodiment of shifting and transforming conditions (social, political, economic, environmental, etc.) of human life, as expressed by Boccioni (cited in Harrison et al. 1993) and as witnessed in the evolution of technology-supported actions described in the theory and method of life-based design (LBD) (Leikas 2009; Saariluoma and Leikas 2010). Such actions and behaviours in people's everyday lives rely on technology. These change over time in relation to an individual's life circumstances, as well as the ever-changing nature of society and culture.

3. Futurism, Madness and Emotions

When Futurism was conceived, Europe was in the midst of radical technological and societal changes (Pobuda 2017; Sconce 2011). Industrialisation was taking place at an overwhelming speed. Electric lights began to line city streets. Electrical and electromagnetic induction-powered machines began to permeate industry and eventually homes. X-rays made it possible to see inside the human body without invasive surgery, and the world became ever more connected via telecommunications and mass media – increasing long-distance communication without the need to physically travel. While these technological advancements seem wondrous, they came with social and psychological repercussions. Changes in the sounds of the urban environmental scape, in addition to all the other sensory stimulations that began to bombard city inhabitants, were said to contribute to the condition of neurasthenia – a weakness of the nerves that triggered anxiety, depression and fatigue (Gijswijt-Hofstra 2019; Sconce 2011; Taylor 2001).

In addition to the concrete effects that technological advancements were having on the brain and body, technological developments also spurred the imagination in terms of its ability to allow people to transcend from the natural to the supernatural. For instance, in the early 1900s there were technological aspirations to communicate with the dead, as well as wordlessly from one person to another (Chessa 2012; Pobuda 2017). These issues have recently gained momentum in public technological and scientific discussion, for example Elon Musk's[3] Neuralink brain implant initiatives

[3] Musk could be described as a bold Futurist of our time, embracing many of the futuristic ideas of the past and present to forge a technological and business future.

(Hitti 2019) and the availability of big data and internet profiles of the deceased (Berman 2018; Economou 2019) that enable people to seemingly talk to the dead through artificial intelligence (AI). Tanya Pobuda (2017) ponders whether the Futurists were fascinated with technology, or indeed magic.[4]

The turn towards magic and the occult compounded the Futurist movement's deviation from the Catholic Church and the increased incidence of anxiety (neurasthenia) in society caused by the proliferation of high-speed technology, artificial lights and machine-induced soundscapes (Chessa 2012). Marshall McLuhan, who pioneered the term 'the medium is the message', postulated that the technological network that is increasingly connecting and taking over human society is an extension or live model of the human nervous system. This form of thinking uncannily predicts what is currently happening in terms of initiatives such as cognitive computing and the *Google cognitive–experiential takeover*. Thus, from an aesthetic perspective, scholars have connected Futurism to madness based on a combination of psychological (impact of technology on the mind and body), spiritual (rejection of religion and move towards the mystical pseudo-scientific connections of technology and the occult), and political (disruption of traditions, material and collective memory, and promulgation of political and economic agenda through technological speed and magic) principles. Once again, the modern-day informal Futurist Musk can be described as mad, not simply in his drive to utilise information technology to achieve *magic*, but also in his understanding of himself as a unique power unit in the society of the connected mind.[5] This connected mind – as it should be understood from recent developments such as cognitive computing – needs to be characterised not just in terms of a simplistic notion of cognition, but rather in relation to dimensions, layers and states of emotion, framing, intention and apperception (the process of creating mental representations of the world and its phenomena based on the intermingling of a variety of sensory and mentally based information, see, e.g., Saariluoma 2015).

Emotions play a key role in a number of cognitive functions ranging from attention and memory to sentiments and sense making (experiential recall and logic, see Rousi 2013). However, emotions play a significant role in how people experience Futurism and expectations of the future, as well as future

[4] General Magic is a defunct technology company responsible for many of today's 'smart' innovations. It is briefly discussed later in the chapter.
[5] See, for example, https://www.wired.com/story/elon-musk-tesla-tweets-struggles/

design. Moreover, in terms of overall wellbeing, emotions constitute the greatest contributors and experiential qualities of mental illness (Melges and Fougerousse 1966). While there are numerous theories of emotions, particularly basic emotions, Carrolle E. Izard (2013) provides a useful categorization of the fundamental emotions of anger, disgust, fear, shame, contempt distress, surprise, joy and interest. These emotional terms are relevant when considering human reactions to future design, and especially the future in general. In his work on emotions in anxiety and depression, Izard (2013) delved deeper to describe emotions as existing in patterns, or in combination with, particular states and circumstances. The reason for considering emotions in combinations, or as complex, stems from the understanding that humans experience multiple emotions at a given point in time. In specific states such as anxiety and depression, patterns can be observed in combinations of emotions that pertain not simply to the fundamental emotions, but also to somatic (bodily) and cognitive components.

Thus, when observing madness in relation to Futurism and future design experience, both madness and emotions can be used to describe human responses to environmental influences (Theodorou 1993). Moreover, the strong (aroused) experience and expression of emotions such as anger, fear, and even joy and desire have often been considered interchangeably with madness (de Sousa 1990). Likewise, emotions have often been said to threaten rational thought processes. Yet, due to the integral role that emotions play in thought and cognition, it can be said that they represent rationality (de Sousa 1990; Rousi 2013). Emotions provide the platform, basis or frame through which information is received (perceived) and processed. They also facilitate the connection of information chunks depending on the concerns (Frijda 1988, 1993) – objectives, goals and interests – of the thinker. Emotions in the context of embodied (somatic) cognition also regulate the type of cognitive processing from primal or lower-order (immediate and often somatic) responses to higher-order, secondary and associative processing (Brave and Nass 2007; Hekkert 2006).

Many emotions are considered to be associated with so-called madness, manifesting in social, physical and cultural expressions. Thus, the idea of a radical future and radical future design may indeed be more of an emotional response to uncertainty, as well as socio-cultural hype, than to design and innovations themselves. In order for future design to *exist* it must be recognised as such.

4. MAYA and the Stylistic Language of the Future

As with user experience design and the need to understand *how* to design in order to encourage and enhance specific emotional responses, a 'vision' for (and of) the future is incredibly important when attempting to approach and promote radical innovation (Chandy, Prabhu and Antia 2003). The stumbling block, however, is the issue of design typicality (Mayer and Landwehr 2018) and people's preference for familiarity (Hekkert et al. 2003). The story of the ill-fated General Magic company illustrates how if an idea or design is too new, or arrives too early, before the public's (market's) imagination, even the most potentially desirable product will fail (Kerruish, Maude and Stern 2018). General Magic, an electronics and software company founded in 1990, has been described as the "[m]ost important dead company in Silicon Valley" (Kanellos 2011). It developed and released devices with touchscreens, touchscreen controllers, multimedia emails, USBs, streaming televisions, e-commerce, personal digital assistants, and networked games, which were beyond consumers' imaginations in the 1990s.[6] Since the public failed to appreciate what the technology afforded, or were sceptical of its capacity and reliability, sales floundered.

Thus, timing of the technology was too early as people could not link the designs to their own lived experience: they did not see how the technologies could fit into their everyday ways of being.[7] For example, the company developed the Sony Magic Link, an early predecessor of the smartphone that offered messaging, word processing, spreadsheets, databooks, faxing, address book, calculator, calendar and accounting software, and even served as a remote control. In on-the-spot interviews with people on the street around the time of its launch in 1994, people stated that they did not want such a device and could not think of using it (Kerruish et al. 2018). At the time of release, this mode of undertaking daily activities did not fit into people's life systems (routines and behavioural patterns), which involved physical branches and face-to-face transactions.

[6] These innovations were also arguably overshadowed by the deployment of the world wide web (Kerruish, Maude and Stern 2018).
[7] To understand this phenomenon, see Leikas (2009) or Saariluoma and Leikas (2010).

The main idea behind the smartphone, or Magic Link, dates back centuries to imagining items such as magic wands.[8] These all-in-one objects, which resemble remote controls, enable functions from transportation to transformation. Modern equivalents include the wearable gadgets of Maxwell Smart (Agent 86 from the television show *Get Smart*, 1965–1970) and James Bond (Agent 007, 1953 to present). Based on the experiences and familiarisation gained using these forms of imagined technology through popular culture, it could be assumed that in the 1990s wearable mobile technology in the form of shoe phones, dart gun neckties, audio recording cameras and clothing brush communicators, for example, in practice would have been mature ideas. Yet, when presented with the real-life opportunity to engage with and own a mobile computing device that could replace the need to physically travel to various locations, utilise multiple devices and deal with people, consumers were not ready. This raises the question of how ready today's global population is for technologies such as teleportation, or even autonomous and learning domestic robots.

Thus time can be understood to play a role in individuals' willingness to engage in and adopt technological innovations. This is one aspect to consider from the perspective of the MAYA theory (Hekkert et al. 2003), particularly the maturation of familiarity with designs and their relevance through cognitive occurrences such as the mere exposure effect – a theory that posits that multiple exposure to phenomena increases the likelihood of its acceptance (Bornstein 1989; Zajonc 1968). Furthermore, *meaning* in relation to lived experience (Saariluoma and Leikas 2010), in terms of what designs afford a person to do and achieve within how they experience their life, is a component of MAYA. This is where the semantics (meaning) in terms of affordance (Gibson 1979) – what the technology allows users to perform - of technology derive from the semantic systems of past and present sociocultural regimes (Baha et al. 2012; Loewy 1951).

Timing may also influence when people believe certain technological capabilities should be possible to realise – i.e., their temporal notions of technological experience, and when they expect such technological capabilities to be possible. This involves living life in relation to technology with the expectations of what should be 'to hand' (Heidegger 1962) – and when – regarding their own life and

[8] Incidentally, 'magic wand' is the name given to numerous mobile information technology projects and innovations (see, e.g., Hansen et al. 1997; Ouchi et al. 2005).

techno-generational timeline (Canas-Bajo et al. 2016; Sackmann and Winkler 2013). People hold set notions, or mental representations of the past, present and future, throughout their lifetimes. This aspect qualifies the Futurist rhetoric of speed and their plights to leave the past – and even the present – behind (Marinetti 1909[2016]) in order to embrace the pace of technology. The underlying idea of the socio-historical Futurist perspective was to break with mental models instilled by previous cultural traditions in Italy.

Returning to the style or design language of future technology, we refer to design typicality, which is recognised as future technological design. Thus, there are expectations of what radical future technologies will look and be like based on what is understood through design typicality – or 'the goodness of example' (Barsalou 1985; Hekkert et al. 2003; Loken and Ward 1990). Regarding future technology, design typicality is constantly being manifested and instilled through popular culture, popular science and other media discourse 'predicting' the future. In other words, popular culture helps familiarise the public with the language and innovations of the future. For instance, in a blog article published in 2015, Dean Evans stated that over the next 20 years there will be a huge leap in the technologies and structures of the world. While some things will change dramatically beyond recognition, others will remain the same. A vision of the future that has been developing over the past 100 years or so that is very pronounced in today's societal, economic, political and design discourse, is one in which everything – from nutrition and health (see, the biohacker movement for instance, as well as basic forms of food production), to work and relationships – is mitigated by overt forms, expressions, language, logic and aesthetics associated with science (e.g., biotech), information technology and overall connectivity.

Another issue that effects the direction of future information technology design is the technology's proximity to the body (Wong, featured in Floyd 2018). While mainstream consumers are adapting to the idea of wearable computing, information technology is under development that will be implantable and ingestible. Thus, outward appearance may play an instrumental role in convincing an individual to engage in the technology today, yet its deployment and use will have nothing to do with the design aesthetics of form in the future. It will be more about the feel, function and augmentation enabled by these technologies, and how the individual feels as an entity, or a citizen, as to whether or

not people are satisfied with and positively experiencing these technologies. In other words, future user experience will be about how technology affects the user's physical, embodied emotional experience. A recent study by Rousi and Renko (2020), explores participants' opinions on cognitive enhancement technology. The technological designs were divided into three groups – environmental, on-body (exo) and in-body (endo); the results reflected an increase in negative emotional reactions towards endo technology. Thus, current research suggests that today's information technology consumers may not be ready for the types of design we cannot see and feel, which invades the human body, and has the potential to access and control more of individuals than can even be considered. For instance, Elon Musk has proposed the use of brain implants to eliminate the need for verbal language.

5. Embodied Emotions, Future Technology and the Radical Tech Conclusion

The Futurist movement was cultural, discursive and intrinsically connected to the arts. Art, in turn, is one of the oldest known forms of technology. The word 'technology' in fact comes from the Greek term 'techne' that describes art and craft, in combination with 'logos' – speech and word, or discourse (Buchanan 2019). From this perspective, the design form itself is discourse, a discussion of the present and projections of the future, through connections to the past. Futurism was instrumental in the Italian dictator Mussolini's fascist political propaganda; it promoted speed and the desire, or need, to let go of traditions and the past, as well as technological warfare. When considering the close connection that Futurism (a cultural movement) had with science, technology, politics (fascism) and violence, it is little wonder that strong basic emotions such as fear, anger and disgust (see, e.g., Ekman 1992 and Prinz 2004 for arguments on basic emotion) can be induced by thoughts of future technology. Technology was literally embodied in weaponry and warfare; several Futurists (including Boccioni) died in World War I (Dominiczak 2013). Thus, trust in and emotions towards future technologies (or the lack thereof) could very well be rationally founded (Saariluoma, Korvonen and Rousi 2019).

Thus the public may have a right to be emotionally drawn to the familiar soft curves and shelters, similar to Saarinen's minimalist futuristic designs, because throwing all tradition to the wind, as Marinetti (1909[2016]) chants, can lead to technological violence and warfare. Expressions of future technology, combined with a history of technological violence promulgated by popular culture, incite

rational emotions and states of fear and anxiety about future designs that are profoundly embodied by nature(de Sousa 1990; Saariluoma et al. 2019). According to the principles of MAYA (Hekkert et al. 2003; Baha et al. 2012), people do not accept the unknown and entirely unfamiliar, as they cannot assimilate them into their previously learned information (apperception, e.g., see Saariluoma and Rousi 2015). Yet, what is known and understood can often trigger negative emotions posed by the potential danger of emerging technologies as understood through past cultural, social and physical experiences.

Contemporary society is plagued by concerns about mental health just as in the time of the Futurist movement, particularly in relation to technologically induced mental and social disorders. Neurasthenia – the experience of nerve weakness, anxiety, depression and fatigue (Gijswijt-Hofstra 2019; Sconce 2011; Taylor 2001) – is as prevalent today as it was in 1902 when Segalen employed the term to describe people's adverse cognitive, emotional and sensory reactions to the rapid technological developments happening in their lived environment (Goulet 2013). There is currently considerable discussion about the 4G Zombies and the 5G 'Madzone' (Edwards 2019). It is difficult to tell whether the fear, apprehension and anxiety associated with mental images of radical future designs are culturally induced by past imaginings and circumstances, or whether they are technologically induced by current and emerging technological use. With contemporary Futurists such as Elon Musk pressing forward with embedding information technology into the human body, and especially the nervous system, one may ponder whether extreme emotional reactions to what is already *known* about these types of future technologies should signal to designers to take the reins of development and steer them towards a sheltered and possibly brighter future. For it seems, particularly when the materialism of the immaterial and the intelligence of the artificial are concerned, the lunatics really are running the asylum (Cooper 2004).

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