2 DESIDERATUM OF RESEARCH

Starting with this chapter, I will consider the notion of creativity to clarify its meaning in the context of this work. As will be shown, it is in the very essence of creativity as a concept not to attempt to define it, but rather to approach a general understanding of it. In order to then be able to adequately locate the work within the scientific discourse, I present what knowledge of the given research object is already available to build on. Since the concept of creativity in IT operates in the context of inter- and intradisciplinary discourses, it appears to be a necessity to also mention contributions from other disciplines in order to outline the discourse on creativity in IT as a whole and to further reveal the presumed research gap.

2.1 CONCEPTUAL CLARIFICATIONS

As with other concepts, creativity remains hard to define. A tremendous number of possible approaches are faced with rather vague definitions that differ as the case arises. The conceptualisation of creativity is heterogenous and varies across disciplines, professions, languages – and its terminology itself. For the discourses related to the notions of creativity show that *creativity* is superordinate to a *family of concepts;*[1] including but not limited to buzzwords like *innovation* and *disruption*, misleading and ambiguous terms like *singularity* or, in an extended way of understanding, also *art* and *artistic*.[2] Due to the semantic ambiguity of creativity, these concepts appear to be interchangeable

1 Zygmunt Bauman uses a similar approach of including neighbouring terms into a "family of concepts" when he introduces his understanding of "culture". Cf. Zygmunt Bauman, *Liquid Life* (Cambridge: Polity, 2005), p. 52.

2 Cf. Karen van den Berg, "Kreativität. Drei Absagen der Kunst an ihren erweiterten Begriff", in *Rationalität der Kreativität? Multidisziplinäre Beiträge zur Analyse der Produktion,*

in some statements.[3] Accordingly, an approach to the concept of creativity proves to be rather complex. At the same time, there is a certain risk of misinterpretation since it usually remains unclear whether a statement about innovation, for example, is made in the knowledge of a *family of concepts* – i.e., whether it includes creativity – or not. As early as 1992, in its section on the concept of creativity the Dictionary of Philosophy states that not everyone is referring to the same facts when arguments are expressed in the name of the concept of creativity.[4] In order to avoid a sub-complex approach, the above-mentioned notions related to creativity, hence its *family ties*, cannot and will not be completely excluded within this work.

Despite the term's variety of possible semiotic expressions however, the distinction between the *shell* and the meaning of the concept of creativity does not necessarily imply entirely arbitrary meanings. Rather, it is to be assumed that a fundamental and common understanding exists, on the basis of which possible narratives and interpretations are competed for. For this, Gallie coined the notion of an *essentially contested concept*, meaning that differently used terms "subserve different though of course not altogether unrelated functions".[5] It hence considers an open concept – such as creativity is – from certain angles, through which a term is further specified beyond its core meaning – albeit "an unequivocal meaning as between its different (contestant) users"[6] exists.

It is in the very nature of an essentially contested concept that it inherits diverging disputes "which, although not resolvable by argument of any kind, are nevertheless sustained by perfectly respectable arguments and evidence".[7]

Organisation und Bildung von Kreativität, eds. Stephan A. Jansen, Eckhard Schröter and Nico Stehr (Wiesbaden: VS Verlag, 2009).

3 For example, a specific notion of creativity can be (intentionally or unintentionally) implied when talking about innovation.

4 Cf. Joachim Ritter, (1992), p. 1194.

5 Walter B. Gallie, "Art as an essentially contested concept", *Philosophical Quarterly* 6, no. 23 (1956): 168, doi: https://doi.org/10.2307/2217217. Gallie provides the examples of "work of art", "democracy" and "Christian doctrine" for which different schools, groups, parties or communities (among others) exist in parallel. Whether a concept is *essentially contested* depends on five different characteristics that all must apply. In short, it must be appraisive (1); must have an internally complex character (2); is initially variously describable (3); is modifiable or *open* in character (4); and parties involved must be aware of a concept's contention (5). Cf. ibid., p. 171f.

6 Ibid., p. 175.

7 Ibid., p. 169.

With respect to the concept of creativity, the narratives within art and computer technology, for example, would represent individual perspectives that are "perfectly genuine"[8] and justified in themselves. The concept of creativity thus contains partial sub-concepts whose meanings and relationship are theoretically controversial among one another yet based on the same core content. Gallie's idea, although referring to contentions, therefore assumes a certain equilibrium between the respective points of view, not least because each perspective considers its own narrative to be correct, making the actual dominance of a single narrative within the framework of this theory rather unlikely:

> "Each party continues to maintain that the special functions which the term [...] fulfils on its behalf or on its interpretation, is the correct or proper or primary, or the only important, function which the term in question can plainly be said to fulfil. Moreover, each party continues to defend its case with what it claims to be convincing arguments, evidence, and other forms of justification".[9]

Simultaneously, certain members of individual disciplines are well aware of their own limited points of view of creativity as a term. For example, the neuropsychologist Henrik Walter acknowledges that only a part of creativity, namely the process, can be comprehended by his discipline. However, since creativity is not only a "purely individual psychological"[10] phenomenon but is also defined by the recognition of the creatively new, a definition would lie outside the area of competence outlined by neuroscience. Therefore, it seems vital to first present the term's context and to clarify its semantic origin as well as its development before the influence of IT on a fundamental and not only subject-specific basic understanding (in Gallie's sense) of the concept of creativity can be considered in more detail.

Research into creativity was originally established in the field of psychology. After a first appearance by name in 1931 by E. D. Hutchinson[11], the concept of creativity became widely known only after the psychologist J. P. Guilford postulated creativity as a separate field of research in the area of intel-

8 Ibid.

9 Ibid., p. 168.

10 Henrik Walter (2006), p. 595.

11 Eliot D Hutchinson, (1931). Materials for the study of creative thinking. *Psychological Bulletin*, 28(5), p. 392–410.

ligence research in 1950. At a psychology congress as early as 1960, Guilford then claimed that every human being is creative. Only a few years after the broad introduction of the concept of creativity, it was thus already fundamentally democratized in the field of psychology by its most prominent expert to date.

Starting from there, the concept has had an almost unprecedented career in the last decades. Creativity seems to be composed by various notions and related terms (such as *innovation* or *ingenuity*) that are affected by several scientific disciplines and societal fields. In the following, a general overview of research on creativity as well as the paths to it will therefore be presented in order to identify relevant connections to IT with the aim of making a concept of creativity operational for the subsequent analyses regarding a specific creativity narrative of IT.[12]

2.2 CURRENT STATE OF THE DISCOURSE ON CREATIVITY IN IT

The projected dissertation aims to contribute to creativity research at a time when both the creative imperative and the digital transformation meet in the phenomenon of artificial (i.e., or computational) creativity. This *uncreative art*[13] leads back to the ontological question of what constitutes human creativity in the first place and how *natural* (hence: human) and artificial (hence: computational) creativity might differ from each other. In the subsequent attempt to operationalise the concept of natural creativity to its artificial equivalent, the already diffuse discourse on creativity was extended by further narrative perspectives from various special discourses: The being and becoming of humans in times of digital transformation and the advent of smart machines

12 Within this work, the term *narrative* is used in a somewhat expanded format. The concept does not only refer to the story-telling ductus (of creativity), but also to its inner impetus. It therefore includes the question of how creativity in IT is conceived, understood and implemented beyond the outward representation. In other words, the term narrative involves both an external descriptive narrative and an inward-looking organisational narrative by means of operationalising the concept of creativity.

13 This was the title given to the concept of artificial creativity in a welcoming lecture on the topic of the same name at the Humboldt Institute for Internet and Society. Cf. Humboldt Institute for Internet and Society, *Digitaler Salon: Zahlen, die malen*, YouTube, posted by Humboldt Institute for Internet and Society, 5th February, 2019, https://www.youtube.com/watch?v=t74H1OVFW-I.

are two examples being discussed and negotiated along to a general debate on the capacity to be or act creative.

Hence, the notion of creativity in IT affects several scientific disciplines and societal fields. The range of contributions to the topic is correspondingly broad: Teresa M. Amabile, decades-long researcher on creativity, points out that if strides are to be made in the sciences, humanities, and arts, a far more detailed understanding of the creative process must be arrived.[14] These strides have actually been made in "an ever-expanding variety of disciplines"[15] but in particular in the field of psychology: amongst other approaches, neuroscientists approximate a mapping of how and where creative cognition is processed in the human brain[16] while further research points to the neurophysiological origin of creativity, demonstrating a connection between daydreaming and creativity.[17] Although science is thus able to get closer towards an understanding of *how* creativity is processed in the human brain, it remains a question *what* creativity actually is.[18] Artificial creativity is an often-involved aspect in thereof resulting debates, which is why IT enterprises attempt to understand artificial creativity by approaching human creativity from different perspectives, such as psychology and neurosciences. With the proclamation to make substantial progresses in the field of artificial creativity[19] the IT sector itself is confronted with a need of comprehension regarding creativity in order to understand and value what *kind* of substantial progress is meant specifically and how it could be evaluated. Answers seem to be a good way off: at the very beginning of her book on computers and creativity *The*

14 Teresa M. Amabile and Beth A. Hennessey, "Creativity", *Annual Review of Psychology* 61, January (2010), https://ssrn.com/abstract=1601146.

15 Ibid.

16 Rex E. Jung, Brittany S. Mead, Jessica Carrasco and Ranee Barrow, „The structure of creative cognition in the human brain", *Frontiers in Human Neuroscience* 7: July (2013): 330, doi: 10.3389/fnhum.2013.00330.

17 Scott B. Kaufman, "Dreams of Glory", *Psychology Today*, last modified 11th March, 2014, https://www.psychologytoday.com/us/articles/201403/dreams-glory.

18 Cf. Margaret A. Boden, *The Creative Mind: Myths and Mechanisms* (London: Routledge, 2004).

19 Cf. Amílcar Cardoso, Tony Veale and Geraint A. Wiggins, „Converging on the Divergent: The History (and Future) of the International Joint Workshops in Computational Creativity", *AI Magazine*, Fall 2009, pp. 15-22.

Creative Mind: Myths and Mechanisms, Margaret A. Boden claims that "human creativity is something of a mystery, not to say a paradox".[20]

Boden explicitly does not refer to the usage of creativity here, but to its apprehension. Interest into the latter was pushed aside over time, especially since the end of the 1990s and progressively in the first years of the new millennium. Increasingly, management literature on the subject of creativity – and thus the applicability, the organisation of creativity in the entrepreneurial environment – is booming. The underlying economic connotation of the term creativity perceives the term as a resource that can be transformed into an acquirable skill that consequently ought to be scaled and exploited in the most efficient way.[21]

In this respect, economist Richard Florida can be seen as having been highly successful in promoting this approach with his influential book *The Rise of the Creative Class* from 2002. Florida famously argues that it is the "creative class" that drives regional economic development and essentially determines its prosperity and future viability. This led to a situation where the economic interpretation became the dominant discursive reading of creativity – and with it the exploitation of creativity as a concept in the pursuit of a mere economic ideology of progress, as the rapidly emerging critical response to this understanding of creativity puts it: Cultural scientist and artist Marion von Osten was among those introducing the concept of the *creative imperative*, hence the dictum of not just *aspiring to be creative*, but the *urge to be creative*.[22] Artists, designers, architects, journalists and their kind become the dominant class to strive for. Where the difference between the ability to be creative and the aspiration to be creative already reveals the fundamental desire to promote and make use of creativity, the creative imperative excels in exceeding this desire by making creativity an obligation. A desirable option turns into a requirement without reproach: To not desire to be creative and to not exploit one's own creative potential, as sociologist Andreas Reckwitz presents it in a pointed way, strikes him as an absurd intention "just as it may have been the intention at other times not to be moral, not to be normal or not to be au-

20 Boden, *The Creative Mind: Myths and Mechanisms*, p.1.

21 Peter Koslowski, *Einführung*, in: Abel, G. (Ed.). *Kreativität* (Hamburg: Felix Meiner, 2006), p. 1083.

22 Marion von Osten, *Unberechenbare Ausgänge*, in G. Raunig; U. Wuggenig (Ed.), *Kritik der Kreativität* (Wien: Turia + Kant, 2007)

tonomous".[23] As early as the 1990s, managerial literature prepared the ground for this obligation to be creative. In his well-known book *Leading Change*, for example, American economist and professor of leadership management John Kotter sees the will of management to change not as one possibility among many, but as a necessity without an alternative, due to the increasing speed of newly emerging difficulties and challenges.[24]

Despite such literature, however, the imperative to be creative remained cloaked in a cover made of the inevitable desire to be creative, as expressed not least by many guidebooks and advice literature that assess and promote the aspiration to be creative in a throughout positive and, in this sense, inherently under-complex way. As a result, creativity in general, but especially within the business sphere, would be "thoroughly misunderstood", according to journalist and curator Thomas Edelmann: Instead of creativity, this society constantly indulges in the myth of the amateur, i.e., those "idiotic imitators" of what has already existed for a long time, as he puts it in direct words.[25]

From an economic perspective the *need to be creative* culminates in the ostensible standing rule that "creativity and innovation in any organisation are vital to its successful performance"[26], as stated in a comprehensive review on the state of both innovation and creativity in companies.

Following this economic logic, creativity must be thoroughly organised in order to be able to produce it and use it as fuel, as a quantifiable raw material. The organisation comprises both the geographical and architectural conditions of potentially creative ways of working as well as the selection, implementation and performance of respective types of work. The geographical focus on urban centres is specific at first, known as *creative cities*.

The term *creative city* is coined by Charles Landry, who engaged urban creativity through his studies in the UK and Germany in 1990 and 1994. According to Landry, the term was preconfigured in a 1988 agenda by former Australian Minister for Planning and Environment in Victoria, David Yencken, who suggested that a city should be emotionally satisfying and stimulate the creativity

23 Reckwitz, *Die Erfindung der Kreativität*, p. 9.

24 Cf. John Kotter, *Leading Change*, (Boston: Harvard Business School Press, 1996), p. 161.

25 Thomas Edelmann, *Kreativität ist nur ein Wort – Wie Design zum Vorbild wurde*, in: Jarchow, M. (Ed.). *Kreativität in Gestaltungsprozessen*, (Neumünster: Wachholtz, 2011), p. 21-40.

26 Neil Anderson, Kristina Potočnik and Jing Zhou, *Innovation and Creativity in Organizations: A State-of-the-Science Review, Prospective Commentary, and Guiding Framework*, Journal of Management 40, no. 5 (2014): 1297–1333, doi:10.1177/0149206314527128.

of its citizens.[27] Richard Florida then introduced the concept of *creative cities* as an essential component of his theory on the creative class. In it, the question of reciprocal effects and developments among cities and those active in the creative class is addressed.[28] Accordingly, the transformations of cities into creative hubs with an increased economic wealth is credited to members of the creative class, which are specifically known for their increased mobility. Other types of labour are initially excluded from this process. Due to the creative class' increased mobility, members would tend to concentrate in certain metropolises, so that the term *creative cities* essentially refers to densely populated, urban centres.[29] The transformation of cities is expressed through new forms and structures of work seeping into town pictures – such as the *co-working spaces*, which favour to be situated in *creative cities*.[30]

Yet, even before Florida further popularised the concept of *creative cities*, research had already been conducted on this topic. The study "The Creative Community – Leveraging Creativity and Cultural Participation for Silicon Valley's Economic and Civic Future" from 2001 is an example of how creativity was seen from an economic perspective around the turn of the millennium and how attempts were made to organise it. Furthermore, it is particularly important with regard to the topic of creativity in IT. For this reason, I will go into some relevant aspects of the working paper above mentioned in more detail. The study, prepared by the think tank "Collaborative Economics", explores the questions of why it is important for Silicon Valley to become a so-called *creative community* and what constitutes such a community in the first place. In a further step, the study is intended to contribute to the creation of an index capable of "the identification and development of quantitative measures of progress".[31] Although suggestions are made on how to measure creativ-

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27 Cf. Charles Landry, *The creative city: A toolkit for urban innovators*, (London: Earthscan, 2012).

28 Cf. Richard Florida, *Cities and the Creative Class* (New York: Routledge, 2005).

29 Stefan A. Jansen, *Magnetismus der Metropole als Stätte der Kreativen. Ein Überblick bildungs-, migrations-, politikökonomischer Analysen zur Dynamisierung von Metropolen*, in: Jansen, S. A.; Schröter, E.; Stehr, N. (Ed.). *Rationalität der Kreativität?*, (Wiesbaden: VS, 2009), p. 67-92.

30 The concept of co-working spaces and its connection to the specific creativity narrative of IT is examined in more detail in chapter 6.1.2

31 Kim Walesh & Doug Henton, *The creative community-leveraging creativity and cultural participation for Silicon Valley's economic and civic future*, (San Jose: Collaborative Economics, 2001), p. 1.

ity (for example, through cultural participation or cultural outcome) the very last sentence of the paper then reads "How would you measure progress?", identifying a difficulty in grasping creativity as a measurable resource.[32] Although the (quantitative) measurability of creativity was defined as a goal, the actual implementation of such a measure therefore remained largely undefined. Furthermore, the study is noteworthy for a number of reasons that, collectively, once again highlight the complexity and definitional ambiguity of the concept of creativity – especially with regard to the IT economy, as in this case by focusing on the Silicon Valley. The study first noted that there is an opportunity:

> "to spark a "Regional Renaissance" in Silicon Valley that evolves Silicon Valley into the world's first true Creative City-Region, where creativity leads not only to continued technological excellence, but to artistic, cultural, and civic innovation. The region can be the first in history to consciously develop and connect creative capacity across business and cultural realms."[33]

Interestingly, Silicon Valley as of 2001 is not yet considered truly creative by the authors of this study. To gain this attribution, a region like Silicon Valley requires not only technological innovation, but also cultural creativity. It is therefore remarkable that different forms of creativity are distinguished, which are capable of combining their respective capacities, but do not mean the same and are represented by different groups. More precisely and based on the works of the urbanist Peter Hall, the study distinguishes between *Technological and Business Innovation* which "is about devising new products, services, technologies, industries, and ways of doing business" (such as the semiconductor, the entrepreneur, or the Internet), *Artistic and Cultural Innovation* because creativity "is also (sic!) about advancing the fine and the performing arts, literature, commercial arts, popular culture, and avocational or amateur arts" (such as new forms of literature, music, or other forms of aesthetic expressions) and *Civic Innovation* that "has produced a range of public innovations in the built environment and in social institutions" (such as the subway, social security, or democratic institutions).[34] This distinction once again underlines the application-oriented character of the study, giving the authors

32 Ibid., p. 15.

33 Walesh, *The creative community-leveraging creativity and cultural participation for Silicon Valley's economic and civic future*, p. 1.

34 Ibid., p.4.

the advantage of being able to limit themselves to examples of results relating to the respective manifestation of creativity. According to the authors, however, it is especially the combination of all three distinguishable types of creativity that seems to be crucial "for securing the Valley's long-term economic and civic achievement"[35] so that "the joint evolution of technological and cultural creativity may prove not just interesting but essential".[36] To address the question of feasibility the study continues to refer to Peter Hall, whose "landmark book" *Cities in Civilization* strives to answer the question "What makes for a creative city?".[37] Despite the same wording, Hall never had the impact Florida received shortly after. Interestingly, Richard Florida does not refer to Peter Hall at any point in *The Rise of the Creative Class*. Only in a note at the end of the book Hall's *Cities in Civilization* is mentioned as marginalia, which shows that Florida at least took note of Hall's works.[38] In Florida's even more resembling subsequent book *Cities and the Creative Class* there is no more reference to Hall to be found.

The study, which aims to transform Silicon Valley into the first truly creative region, retains Hall's work in its formulation of "common factors of creative cities" at which a distinction between cultural and technological creative cities is consequently maintained.

Conditioned by the advent of the creative imperative, creativity was highlighted as a central skill of the working subject so that the concept could fundamentally break free from its mystically transfigured heritage represented by a cult of genius.[39] Instead, it has been commodified by the economic mindsets inherent in the creative industries: The study on creativity in Silicon Valley discussed above, emphasises that "we often think of creativity as the province of the exceptional individual – the creative genius", however "research and experience also show that everyone has the ability to create and that creativity is also a collaborative process".[40] Paradoxically and despite the democratic

35 Ibid.

36 Walesh, *The creative community-leveraging creativity and cultural participation for Silicon Valley's economic and civic future*, p. 3.

37 Ibid.

38 Richard Florida, *The Rise of the Creative Class, Revisited* (New York: Basic Books, 2012), p. 451.

39 Hannes Krämer, *Praktiken kreativen Arbeitens in den Creative Industries*, in: Göttlich, U.; Kurt, R. (Ed.). *Kreativität und Improvisation*, (Wiesbaden: Springer VS, 2012), p. 109.

40 Walesh, *The creative community-leveraging creativity and cultural participation for Silicon Valley's economic and civic future*, p. 5.

nature of this universal capacity, organising the narrative of creativity continues to be fuelled by the idea of an individual genius. In spite of the creative imperative's weight, the idea of individual genius has nonetheless surpassed the general democratisation of the term and continues to exist in parallel. IT comes to the fore here: for a long time, the late Steve Jobs was the archetype, but for some time now business blogs, pages on business success and the like have been referring to personalities such as Elon Musk or the Chinese entrepreneur and founder of Amazon competitor Alibaba Jack Ma. These narratives are usually loaded with references to the *natural*, unspoiled genius who left university after a short time to found a company, thus already carrying the knowledge for this endeavour within him or herself.[41]

Further attempts of explaining and approaching the concept of creativity derive from a contemporary *philosophical IT* that aims to evaluate and question IT's influences on both society and human beings. Protagonists are IT experts with roots in the counterculture of the 1960s and its related hacker movement, such as computer scientist and artist Jaron Lanier, renowned computer scientist and cultural journalist David Gelernter or the neuroscientist and founder of Palm Computing Jeff Hawkins, of which the latter addresses creativity as "a necessary component of prediction"[42] and thus "a challenge to the entire idea of building intelligent machines.[43] In the wake of these developments, there is a concern that artificial systems could harm humans if they were too autonomous and unconstrained. It is pointed out "that these systems are likely to behave in anti-social and harmful ways unless they are very carefully designed".[44] The IT sector itself takes these concerns quite serious and establishes countermeasures such as Google's ethics council. As a consequence, the company's set of principles includes clearly defined objectives for AI and

41 The extent to which the development of the European idea of genius is known, especially in Anglo-Saxon contributions, remains unclear. Presumably, however, no deliberate reference is intended. Cf. on this only Jochen Schmidt, *Die Geschichte des Genie-Gedankens in der deutschen Literatur, Philosophie und Politik 1750-1945*, (Darmstadt: Wissenschaftliche Buchgesellschaft, 1985).

42 Jeff Hawkins and Sandra Blakeslee, *On Intelligence* (New York: Times Books, 2004), p. 123.

43 Ibid.

44 Steve Omohundro, "Autonomous technology and the greater human good", *Journal of Experimental & Theoretical Artificial Intelligence* 26, no. 3 (2014): 303, doi: 10.1080/0952813X.2014.895111.

even identifies those applications Google will not pursue.[45] These formulations go back to a series of internal disputes that questioned the company's stand on ethics and its former official motto *don't be evil*, underlining the difficult and tense dynamics between IT, politics and society, which is therefore of importance with regard to the creativity narrative of IT.[46]

IBM, as a second example, underlines the importance of AI machines giving people good reasons to trust them – albeit the concept of trust is understood here as transparency and control.[47] This led to the creation of the "Partnership on AI" in 2017, which brings together 90 different institu-

45 These applications include AI technologies that "cause or are likely to cause overall harm", weapons, applications that "gather or use information for surveillance violating internationally accepted norms" and the rather openly formulated technologies "whose purpose contravenes widely accepted principles of international law and human rights". Cf. Google, "Artificial Intelligence at Google: Our Principles," *Google AI*, [accessed 9th April, 2019], https://ai.google/principles. Google also mentions that it wants to approach its aims with prudence and "humility". Cf. Ibid.

46 In particular, the dynamic refers to the field of tension between management and employees, politics and society - as can be seen from the background story of Google's *AI Principles*: already in 2006, Google received a lot of opposition from employees when it launched a censored version of its search engine in China, as employees saw the company's principles in terms that they "were supposed to make the world's information universally accessible, not suppress it", with the consequence of Google leaving the Chinese market in 2010. Yet, two months after a first version of the above listed principles were published, Google was said to try secretly again establishing a censored search engine (named Dragonfly) in China (which would have blacklisted terms like *human rights* or *air quality*) and again encountered massive opposition by employees when they learned about the previously leaked plan. Politically right-wing critics now also joined in and accused Google of being "un-American". In consequence, Google's CEO had to defend the company's stance on an official hearing, leading to senator Elizabeth Warren's "plan to break up Big Tech" and the American President Donald Trump tweeting "Google is helping China and their military, but not the U.S. Terrible!". Cf. Nitasha Tiku, "Three years of misery inside Google, the happiest company in tech", *Wired*, last modified 13th August, 2019, https://www.wired.com/story/inside-google-three-years-misery-happiest-company-tech/; Issie Lapowsky, "Elizabeth Warren fires a warning shot at big tech", *Wired*, last modified 8th March, 2019, https://www.wired.com/story/elizabeth-warren-break-up-amazon-facebook-google/.

47 IBM, "Trusting AI", *IBM AI Research*, [accessed 7th May, 2019], https://www.research.ibm.com/artificial-intelligence/trusted-ai/.

tions (with Apple, Amazon, Google, Facebook, IBM, and Microsoft as founding partners).[48]

Most often, however, the narrative of creativity in IT and its attributed effects on both the individual and society are reported rather affirmatively from IT and its related associations and groups of interest. *Fast Company magazine*, for example, a magazine focusing on technology, business and design, published a whole issue entitled "How to Unleash Creativity".[49] Leaders of IT companies seem to confirm the relevance of creativity for their corporations. Bill Gates, founder of Microsoft, gave a radio speech with a very similar title already a few years earlier (*Unleashing the Power of Creativity*)[50] and Ed Catmull, president of Pixar Animation wrote a book about his company entitled "Creativity, Inc.".[51] Catmull in particular, but Gates and others in general too, hence use the discursively prevailing positive image of creativity to project it onto their IT companies with the help of an image transfer.

In direct contrast to this affirmative perspective, diametrically opposed mindsets exist. On the one hand, these are IT entrepreneurs who have an affinity for technology and deal with concepts in the field of post- and transhumanism, as well as the so-called technological singularity.[52] On the other hand, there is an academic community that takes a much more critical stance on the tech scene and its current technological developments.

In the presence of large IT companies and somewhat overwhelming technologies, certain IT experts such as Jaron Lanier feel an unease, stating no-

48 Eric Horvitz and Mustafa Suleyman, "Introduction from the Founding Co-Chairs", *Partnership on AI*, last modified 28th September, 2016, https://www.partnershiponai.org/introduction-from-the-founding-co-chairs/.

49 Fast Company, http://www.fastcompany-digital.com/fastcompany/201404?pg=1#pg1.

50 Cf. Bill Gates, "Unleashing the Power of Creativity,"*National Public Radio*, last modified 19th September, 2005, http://www.npr.org/templates/story/story.php?storyId=4853839.

51 Edwin Catmull, *Creativity, Inc.: Overcoming the Unseen Forces That Stand in the Way of True Inspiration* (New York: Random House, 2014).

52 The concept of technological singularity describes a predicted point at which machines and AIs can independently develop themselves further, which, due to the expected exponential development, will then lead to a very rapid, radical change in the history of mankind. Cf. Ben Goertzel, "AI Can Help Create a Better World – If We Build it Right", *SingularityHub*, last modified 13th August, 2018, https://singularityhub.com/2018/08/13/ai-can-help-create-a-better-world-if-we-build-it-right./.

tions like "You alone are Google over all the kingdoms of the earth".[53] US-based economist Shoshana Zuboff asks whether technology could replace humans and stated: "a sense of doom and helplessness has planted itself in our public conversation".[54] Most recently, Zuboff described the current state of affairs as the *age of surveillance capitalism*, stating: "the entangled dilemmas of knowledge, authority, and power are no longer confined to workplaces as they were in the 1980s. Now their roots run deep through the necessities of daily life, mediating nearly every form of social participation".[55] In her work, Zuboff explicitly mentions large IT companies such as Google as usurpers for surveillance capitalism: IT not only prepares the stage for the project of digitisation, but also creates a world in which they are in charge and act as both creators and administrators. Zuboff asks about "the very possibility of a human future in a digital world".[56] According to her, the current logic of IT supports the "rapid mutation into a voracious and utterly novel commercial project"[57] that she calls *surveillance capitalism*, making her one of the fiercest (and most vocal) critics of the IT sector.

Hence, the bewilderment about technological developments ranges from categorical demonization to apologetic deification. Standpoints rarely seem to be in the balanced middle, but rather at the outer edges of two extreme poles.

Yet in works on social creativity research, IT in general and large tech companies and their protagonists in particular are perceived only as marginal discursive actors.[58] Besides, the concept of creativity is being discussed in

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53 Jaron Lanier, "Whoever owns our data will determine our fate",*Frankfurter Allgemeine Zeitung*, last modified 24th April, 2014, https://www.faz.net/aktuell/feuilleton/debatten/the-digital-debate/almighty-google-whoever-owns-our-data-will-determine-our-fate-12908348.html.

54 Shoshana Zuboff, „The human factor", *Frankfurter Allgemeine Zeitung*, last modified 18th July, 2014, https://www.faz.net/aktuell/feuilleton/debatten/the-digital-debate/digital-economy-the-human-factor-13050472.html.

55 Shoshana Zuboff, *The age of surveillance capitalism: the fight for a human future at the new frontier of power* (New York: PublicAffairs, 2018), p. 7.

56 Ibid., p. 10.

57 Ibid.

58 An exception might be the research on so-called collective creativity, where growing interdisciplinarity is taken into account to shift focus from research from individual creativity towards collective. Cf. Satu Parjanen, "Experiencing Creativity in the Organization: From Individual Creativity to Collective Creativity", *Interdisciplinary Journal of Information, Knowledge, and Management* 7 (2012).

a rather figurative sense and is more likely to tacitly resonate than to be discussed explicitly in social analyses that take greater account of the phenomenon of digitisation. Here, too, IT remains in the rough when digitisation in the broader sense is indeed identified as a constitutive-transformative process for today's societies, whereas digital technologies in bond with their creators always remain comparatively abstract and approximate (*the* digital transformation; *the* technology), though, as the following paragraphs outline.

Marion von Osten analysed the coherence between the new economy and creative industries, but this aspect only contains a partial area of overall IT.[59] Von Osten challenges the existence of the creative industries: although they are an intended requirement and an area of political visions, creative industries are, in her view, yet to come. They are only rudimentarily established in certain countries like Germany or Great Britain, the source of a discourse on creative industries – despite its attempt to privatise the cultural sector in every respect.[60] However, she is not directly connecting the concept of creative industries with a narrative of creativity in IT, neither does she discuss individual protagonists from the IT sector directly.

Sociology in particular diagnoses the present as a period of social change and fundamental transformation and ascribes a leading role in this to digitisation (and its semantic equivalents, such as *technology*). However, the role of IT companies as well as their leading figures themselves fall short of analysing the impact of digital transformation. Andreas Reckwitz indeed considered these in his analyses. He mentions Steve Jobs and Marc Zuckerberg by name and concedes them the ability to act as *stars* and *creative folks* in one of his most influential works known in English as *The Invention of Creativity: Modern Society and the Culture of the New*.[61] Nonetheless, he only symbolises them as rare examples of businessmen becoming famous within the scope of an extended *system of celebrities* and does not take their field of expertise, the IT sector, into considerable account.[62] Following on from *The Invention of Creativ-*

59 Marion von Osten, „Unberechenbare Ausgänge", in *Kritik der Kreativität*, eds. Gerald Raunig and Ulf Wuggenig (Wien: Turia + Kant, 2007).

60 Ibid.

61 Andreas Reckwitz, *Die Erfindung der Kreativität* (Frankfurt am Main: Suhrkamp, 2012), p. 264f. The English version has first been published in 2017.

62 Reckwitz separates the historical formation towards an omnipresent creative need into four single phases. The last of them starts in the 1980s by virtue of the creative industries, a psychology on creativity and a *system of stars*, among other aspects. Although he thus involves a wide spectrum to establish a hegemonic notion of creativity, he ex-

ity,[63] Andreas Reckwitz attempts a general theory of a contemporary form of society, which he calls the *Society of Singularities*. The claim to develop a general theory on the state of society is sufficient to subject the work to a closer examination in order to illustrate the role of IT in this. Reckwitz considers the concept of singularity almost as a neologism but at least as a very scattered term, regarding the term of singularity as unused.[64] In particular, Reckwitz does not deal with Ray Kurzweil's quite prevalent connotation of singularity. Instead, he only mentions (in a footnote) that the term is used differently by him than in the context of research into artificial intelligence or transhumanism as represented by Kurzweil.[65] Reckwitz' main thesis presumes a social structural change takes place in late modernity, where the social logic of the general loses its predominance to the social logic of the particular.[66] Accordingly, we no longer live in industrial capitalism, but in cultural capitalism.[67] In the mode of singularisation, life is not simply lived. It is *curated*. The late modern subject performs the seemingly special self, with other people acting as audiences.[68] However, and still according to Reckwitz, not only individuals or things but also collectives become singularised.[69] The social logic of the particular affects all dimensions of the social: things and objects as well as temporalities.[70] For Reckwitz, this is without precedent in world history:

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cludes influences of the rise of the Internet from his study and disregards most relevant aspects of the related IT industry – despite its significant rise in this period of time. Reckwitz has neither taken a possible affiliation of the IT sector to the creative industries nor the importance of IT protagonists for the concept of an extended *star system* (system of celebrities) into account. Ibid. pp. 52f.

63 To a certain extent, Reckwitz sees his current work as a continuation of his work on the invention of creativity since the structural features he examines were already present in the first work. According to Reckwitz, however, the focus changes: whereas the historical genealogy was at the centre in his book on creativity, it now has a social-theoretical claim. Cf. Andreas Reckwitz, *Die Gesellschaft der Singularitäten* (Berlin: Suhrkamp, 2017), p. 24.

64 Moreover, and despite his claim to use an *unused* term, Reckwitz adds more examples and states that he explicitly does not refer to the historical dictionary of philosophy or to the poststructuralist school of Derrida, Deleuze, Nancy and Negri. Cf. ibid., p. 47.

65 Cf. ibid., p. 11.

66 Cf. ibid.

67 Cf. Reckwitz, *Die Gesellschaft der Singularitäten*, p. 8.

68 Cf. ibid., p. 9.

69 Cf. ibid., p. 57.

70 Cf. ibid., p. 12.

the social logic of singularity since the 1970s and 1980s completely contradicts what has been the core of modern society for over 200 years.[71]

Reckwitz identifies two areas as the causes of this: the economy and technology. The creative economy became the leading industry, and with the digital revolution *a technology* became dominant that is no longer merely standardised.[72] Reckwitz abstractly sticks to the concept of *technology* (Reckwitz uses the singular), without admitting any responsibility to the companies behind these technologies (here deliberately thought in the plural to cope with the complexity of the digital and its numerous creators). To some extent, *the technology* is now present in Reckwitz' approach of a general theory and subject to negotiation – but without the designers of these technologies having a say in the discourse about their creations and their impact on society. IT hardly appears as an actor.

Sociologist Dirk Baecker attempts a similar path to that of Reckwitz and tries to create an *experimental balloon to diagnose the current state of society* [73] – a society that doesn't know what's happening to it.[74] Because, Baecker says, there's a lot at stake. For him, the contemporary digital change is the fourth profound change after the *adventures* of oralisation, literacy and literarisation, all of which were no less overwhelming to society.[75] But as Reckwitz, Baecker does not directly address the role of IT companies themselves (let alone the specific narrative of creativity), although he attests society a progressive attitude in relation to technology and therefore considers a large number of IT-relevant issues in 26 theses.[76]

These examples indicate how the influence of IT is underrepresented in past and current socio-theoretical studies. They either deal individually with digitisation, AI, creativity or IT, or combine these topics, such as AI with creativity (artificial creativity) or digitisation, AI and IT (e.g., Zuboff's *surveillance capitalism*) or creativity with IT and digitisation (economic-affirmative

71 Cf. ibid., p. 14.

72 Cf. ibid., p. 16.

73 Dirk Baecker, *4.0 oder die Lücke die der Rechner lässt* (Merve Verlag: Leipzig, 2018), p. 10.

74 Ibid., p. 266.

75 Ibid., p. 10.

76 As an example, Baecker specifically deals with the issue of communicating with machines. He argues that there is no longer any discussion today of how artificial intelligence can copy and surpass human intelligence. Instead, the specific intelligence of machines can be networked and interconnected with the different kinds of intelligence of bodies, brains, consciousness and society. Ibid., p. 17.

and organisational perspective). Beyond the latter, however, creativity in IT is not given much attention, especially not from a rather critical, at least not affirmative perspective on digitisation and its effects on society and the individual, even though the synergy effects of creativity and the creations of IT in particular are growing in analytical popularity, as demonstrated not least by the above-mentioned debates on creative industries. Many of the contributions played a decisive role in shaping the discourse on creativity and digital transformation – without the anticipated specific and decisive narrative of creativity for IT advancing from the indistinct into the open.

2.3 HYPOTHESES

The state of research on creativity and IT shows that both concepts (the latter is not limited to companies or protagonists but includes technological products and services) have a significant influence on the current way of being, working and thinking in Western cultures and beyond. Both terms simultaneously represent hope and belief in progress as well as concern and a certain discomfort. With reference to the previous chapter, it becomes apparent how both the concept of creativity and IT (or rather the technologies they create) dominate the discourses about the present being in Western societies. The sheer presence of both concepts would hardly exclude the possibility of them overlapping or being conditional in one way or another. However, this is neither reflected nor considered sufficiently in current literature. It is therefore the aim of this thesis to uncover the creativity narrative in IT, i.e., the semantics and organisation of creativity within IT enterprises.

A fundamental assumption is at the heart of this, which forms the foundation of the subsequent analyses in the sense of a main hypothesis, which reads as follows:

The narrative of creativity in large IT companies equals the predominant meaning of the term creativity.

I therefore proceed from the assumption that both concepts (IT and creativity) are in fact not only interdependent, but that IT has contributed significantly to the current imprinting of a general understanding of creativity and is still doing so.

Five further hypotheses can be identified in this core hypothesis, which together are capable of providing a more precise account of causes and effects of the main hypothesis:

1) Creativity has gone from hype to a matter of course and is less present within the discourse in a literal sense but rather subtle and tacit.
2) Due to its technical developments the IT remains omnipresent, hence IT's narrative expression and self-understanding is still the dominant understanding of creativity.
3) For the creativity narrative in IT, creativity is a precondition for quantifiable success. What success means is defined by IT.
4) Moreover, creativity is a purposive vehicle for a logic that acts totally in its core.
5) In IT, creativity is staged in a unique way and thus masks the uniforming nature of IT.