Break-down of breakthroughs: Creativity and Innovation, examining the role of organizing principles

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ABSTRACT

Creativity and Innovation are prominently described as primary practices that lead to sustained competitive advantage of organizations. The dynamic relation between creativity and innovation makes it rather complex to effectively navigate decision making. This research searches to understand how creative- and innovation focused companies guide their decision making to stimulate creativity and to enhance their innovative capabilities, by dissecting the different levels of creativity and the nature of innovation within organizations. In addition, this work examines the influence of three organizing principles on the relation between creativity and innovation: 1 The meaning principle, the positive association of the cultivation of meaning and creative and innovative flourishment; 2 the progress principle, the facilitating effect of progress on the success of innovative endeavor ; 3 the ambidexterity principle, managing exploitation and exploitation, to balance creative and commercial needs of organizations. Five cases studies are conducted on five Dutch creative organizations that focus on different forms of innovation. The findings show that creativity is crucial for innovation to occur and is referred to as a fundamental part of the innovation process. The cultivation of meaning, facilitation of progress, and effectively balancing exploration and exploitation showed to be of significant importance in leading creative endeavor to innovative success.

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1 Introduction

'Change is our friend because only from struggle does clarity emerge. We are willing to adjust our goals as we learn, striving to get it right—not necessarily to get it right the first time. Because that, to my mind, is the only way to establish something else that is essential to creativity: a culture that protects the new.' -Ed Catmull (Catmull & Wallace, 2014)

Creativity and innovation in any organization are vital for successful performance. Previous research puts creativity at the heart of innovation (Amabile & Pratt, 2016; Drazin, Glynn & Kazanjian., 1999; Hagardon & Bechky, 2006). This researches conceives both creativity and innovation as being integral parts of essentially the same process, (Anderson, Potocnik & Zhou 2014; Mumford & Mcintosh, 2017; Batey, 2012) and searches to gain holistic understanding of how creativity and innovation interact. Previous research has commonly separated the two components into creativity as involving the stage of exploration, idea generation and selection, whereas innovation represents the stage of implementation and exploitation. For this research Creativity is thus seen as the path to invention and innovation is seen as the road from invention to success. Creativity and innovation at work are the process, outcomes, and products of attempts to develop and introduce new and improved ways of doing things. This puts both creativity and innovation at the peak of competitive distinction. Derived from the quote of Ed Catmull, it shows that this process is more than just about creating new things, instead it is about designing a construct that enables talent to collectively create. Therefore, innovation is not seen as the completion of a single invention, but more as the movement in which the organization and its leadership shape itself to operate successfully while continuously challenging the status quo. The ability to effectively turn new and original ideas into value, for example in the form of new successful products, or organizational improvements are referred to as the innovative capabilities of the firm.

A lot of the great creatives of our time, consult that, stimulating creative ability is not a matter of forcing the new into existence, it is more a matter of letting the new emerge (Ed Catmull in Catmull & Wallace, 2014; Virgil Abloh in Nike, Abloh, 2018; Massimo Osti in Osti, 2017; Steve Jobs in Tidd & Bessant, 2009) . It is about finding meaning, building a vision, removing obstacles that inhibit creativity, stimulating progress, dealing with setbacks, managing opposing forces, learning from failure and interestingly also from success (Amabile, 2014; Catmull & Wallace, 2014). Consequently, it takes courage to step into the uncertain and it reveals to be a true test of character, both on a personal as an organization level. 'There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain it's success than to take the lead in the introduction of a new order of things' (Machiavelli in Tidd & Bessant, 2009). The natural uncertainty that comes with innovation shows us that the creative and innovation processes can't be fully controlled, yet successful creative companies reveal that it can be guided. It is the challenge to build a certain openness in the organizational sphere, in a way that gaining new experience is facilitated and thus the generation of new ideas can occur

(Catmull & Wallace, 2014; Amabile & Pratt, 2016). On the other hand, turning these ideas into an organization that continuously innovates asks a lot of discipline and seasoned leadership that together with every involved individual construct the principles for creating the new (Steve Jobs, in Tidd & Bessant, 2009)

Both Creativity and Innovation have been extensively researched the last decades. Surprisingly, a relatively low amount of Qualitative research designs has been used for this research. Even though this could be important for understanding the multiplicity of constructs and the different levels of social interactions which have to be analyzed for the correct understanding of the relation between creativity and innovation. This research applies a qualitative approach in the form of five case studies conducted through semi-structured interviews to explore the patterns and differences between selected cases. This is needed because highlighting specific unique cases can be of great importance in developing holistic understanding of the relation between creativity and innovation. In previous literature (Amabile, 2012; Woodman, Sawyer & Griffin, 1993; Hagardon & Bechky, 2006; Catmull & Wallace, 2014) multiple linkages have been made between creativity and innovation, yet most of these scholars have asked for further investigation on how the different levels of creativity and innovation interact with each other. Especially, Amabile (Amabile, 1988; Amabile, Hill, Hennessy, Tighe, 1994; Amabile, 1993) has extensively researched the relation between creativity and innovation. Her approach has primarily been focused on the behavioral aspects of relation creativity and innovation. This research aims to relate her findings to the work of scholars that focused on the implementation and commercialization of innovation (Koen et al., 2004; Tidd & Bessant, 2009; O' Reilly & Tushman, 2013; Mcdonough, 2000).

Besides the organizational effects that rise from creativity and innovation in work, there are also deeper underlying effects on society. Amabile (Ted Talk, 2014), speaks of the dis -affection of society, emphasizing the importance of meaning in our daily life. She argues that there is a rising distance between people and their occupation; in a reality where most people spend more time on working than probably any other activity. Meaning in work is positively associated with both creativity in organization and vitality of people. This shows that there is growing need for the nurturing of meaning within working environments (Amabile, 2014; Catmull & Wallace, 2014). A fundamental lack of meaning often leads to frustration, irritation and fatigue resulting in stress. The accumulation of stress is one of the most dangerous threats to current days- society (Romswinkle, Konig & Hayek, 2018).

Fundamentally exploring the new means exploring the undefined. There is no pre-made well-structured road ahead; it is yet to be discovered. The process is not static and thus unique in every case. This research aims to get closer to a holistic understanding of the fundamental relation between creativity and innovation, while examining the organizing principles in innovation-oriented organizations. These principles resemble fundamental truths that allow organizations to become more

effective in directing movement and decision making. Although this research highly respects the uniqueness of every case, it seeks to identify patterns by looking at the formed organizing principles that guide creative effort to innovative 'success'.

Based on previous literature three organizing principles are identified as being fundamental propositions that impact the relation between creativity and innovation. The first two principles are derived from the comprehensive body of research on creativity and innovation presented by Amabile (Amabile; 1988; Amabile; 2011; Amabile & Pratt, 2016). The first principle is the meaning principle, indicating that meaning is a facilitator of creative behavior and an enabler of innovation. The second principle is the progress principle, indicating that the state of progress has recurring stimulating effect on creativity and is strongly positively associated with innovation. These first two principles have shown to be of strong facilitators of the relation between creativity and innovation, yet they fail to take commercial aspects of business, and how it interacts with creativity and innovation, into account. Therefore, a third principle is added based on additional literature. The third principle is the ambidexterity principle, indicating that within every firm there is a tension between exploration- and exploitation focused efforts, which can be related to the tension between creativity and commerce (O' Reilly & Tushman, 2013). The effective management of dealing with these opposing forces have shown to be crucial for effectively applying creativity and reaching innovative success.

This research aims to develop understanding on how the aforementioned organizing principles effect the relation between creativity and innovation. Thus, the main question of this research is: How does creativity influence innovation and what role do organizing principles play in this relation?

2 Theoretical framework

This chapter addresses the definitions of creativity, innovation and the examined organizing principles. Afterwards, the several angles scholars took to investigate creativity and innovation in organizations are analyzed, building towards the conceptual model that summarizes the formulated questions for this research.

2.1 Creativity & Innovation

Before discussing the relation between creativity and innovation, it is essential that both are specifically defined for the scope of this research. A great amount of attention already went into studying both constructs and therefore it was essential to decide what to include and what not to include. This was also essential for understanding how creativity and innovation are defined, since both concepts have been analyzed from various different perspectives.

Creativity is commonly defined as the generation of ideas or problem solutions, which are both novel and appropriate (of useful value) (Amabile, 1988, Guilford, 1967; Amabile et al., 1994; Runco 1997; Norman & Smith, 1995; Sternber, 1999). When looking at creativity from a process perspective it can also be seen as the intellectual ability to create, invent, and discover, which brings novel relations, entities and / or unexpected solutions into existence (Wang, 2008). This research therefore defines creativity as the ability to generate original and useful ideas over time, by discovering, identifying and shaping new meaningful connections. From a systematic viewpoint, creative input is the antecedent of generating creative output through the necessary process. This input applies to individuals, groups, and organizations, and it is a crucial element in innovation (Sarooghi, Bloodgood, Hornsby & Burnkemper, 2015). Creative input involves creative- process and creative application behaviors. The resulting output comprises creative performance. Creative performance is manifested in the form of invention and breakthrough, which resemble novel connections, opportunities and solutions(Amabile, 2011; Csikszenmihalyi, 1999; Rouse, 1986; Woodman et al., 1993). To analyze organizational creativity, it is needed to develop a holistic perspective and understanding about the separate facets of creativity involving the individual creativity, collective creativity and creativity as a process (Brown, 1989; Harrington, 1990 in Woodman et al., 1993).

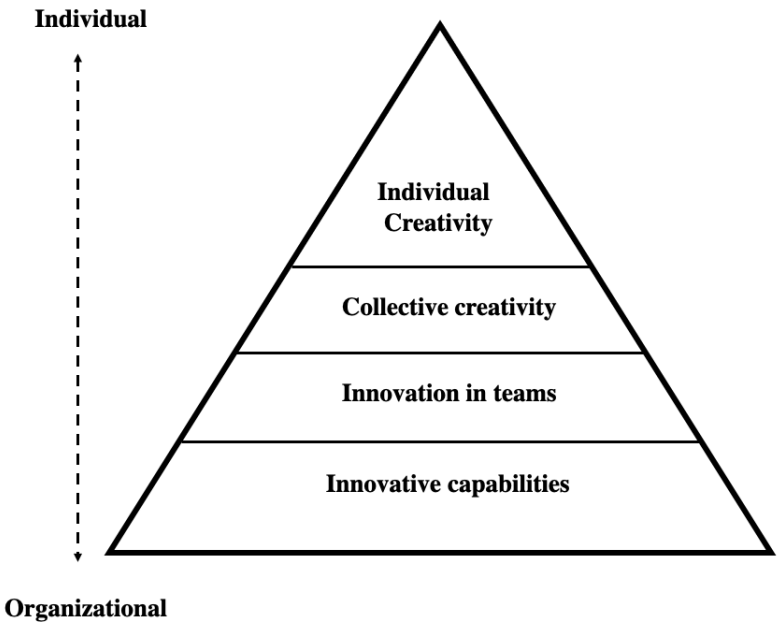
As found in previous literature, innovation can be defined in several ways. It is usually compromised of invention and successful implementation and exploitation of the invention (Amabile, 1988; Tidd & Bessant, 2009; Koen et al, 2002; Davila, Epstein, Shelton, 2006) . Leading to a successful product, service or the revitalization of a process within the system. Therefore, innovation is defined within this research as the successful implementation and exploitation of new ideas and the introduction of successful new products, procedures and processes. In contrast with creativity, success is a more explicitly definable subject in the case of innovation (Anderson et al., 2014). Hence, this research does not only look at innovation as a static outcome, it focuses on the innovative capabilities of

organizations as well. For this research creativity is therefore seen as the path to invention and innovation as the road from invention to success. Creative endeavor is the foundation of invention and the innovative capabilities of the firm allow the firm to translate this invention to either a commercial or organizational success (Anderson et al., 2014; O'Reilly & Tushman, 2013; Davila et al., 2006) . In reality the lines between creativity and innovation are les vivid and the mechanisms that form both constructs are more intertwined. But this research requires explicit separation of creativity and innovation in order to investigate the interactions between these constructs.

Creativity is often conceived as the " fuzzy front end" (Koen et al., 2002; Appendix B) of innovation, which we define as the process before implementation of creative ideas within an organization. In order to establish mutual exclusivity among the concepts of creativity and innovation we use this separation between idea generation and selection – formulation and first concepts of completion as creativity, and idea commercialization and implementation as innovation. The innovative capabilities of a firm refer to the ability of the organization to successfully guide novel and original ideas to success(Mumford & Mcintosh, 2017; Anderson et al., 2014)

This research aims to understand the fundamental relation between creativity and innovation from a holistic perspective. Therefore, this relation will be analyzed by building up the analysis from the individual to the level to the organizational level. Where the seed of creativity starts in the individual and the outcome of innovation is primarily seen as an outcome on the organizational level (Anderson et al., 2014). Figure 1 illustrates how the synthesis between these levels is constructed based on the analysis of previous literature.

Figure 1: Construct of analysis: ranging from individual level to organizational level



2.1.1 Individual creativity: meaning

Previous research has shown that meaningfulness in work is one of the most important indicators for creative productivity of an organization (Amabile & Prat, 2016; Drazin et al. , 1999; Hagardon & Bechky, 2006). The impact of meaning indicates that creativity is in some way also part of the personal journey of every individual within the organization. Individual creativity is often the source of ideas, yet it is established in certain interaction with other involved individuals and contextual influences (Amabile, 2012 in Chang, Chien, Yu, Chu & Chen, 2018).

To be meaningful, work doesn't have to have profound importance to society. What matters is whether a person perceives the work as contributing to something or someone who matters (even, the individual self or family) (Amabile et al., 1994). It can simply be making a high-quality product or providing a genuine service for a community. Within the person, both cognitive (knowledge, cognitive skills, and cognitive styles/ preferences) and non-cognitive (e.g., personality) aspects of the mind are related to creative behavior. In sum, individual creativity is a function of antecedent conditions (e.g., past reinforcement history, biographical variables, cognitive style and ability; e.g., divergent thinking, ideational fluency), personality factors (e.g., self-esteem, locus of control), relevant knowledge, motivation, social influences (e.g., social facilitation, social rewards), and contextual influences; e.g., physical environment, task and time constraints (Woodman et al., 1993. p.296).

Amabile et al. (1994) proposes that work orientation, which refers to how individuals perceive their personal relation to their occupation is at least partially determinant of creative behavior. Individuals that perceive their work as an end in itself, often show more creative behavior and are more willing to take on challenging work. Additionally, she concluded that consistent daily progress in meaningful work by individual employees' fuels both the success of the organization and the quality of those employees ' inner work life' (Amabile, 2014; wrzesniewski, McCauley, Rozin & Schwartz, 2017). Inner work life is referring to how individuals experience their work. To harness this powerful force, it is needed to ensure that consistent forward movement in meaningful work is a regular occurrence in the employee's daily work lives, despite the inevitable setbacks that all non-trivial work entails. Consequently, meaning creates the willingness to achieve and the understanding that not all task are pleasurable (Wrzesniewski et al., 2017; Chang et al, 2018).

2.1.2 Individual creativity: motivation

Amabile & Pratt (2016) present that individuals are too some extent both intrinsically motivated and extrinsically motivated to work. People can be intrinsically motivated toward a task, by interest, enjoyment, satisfaction, and challenge of the work itself, or extrinsically motivated by both extrinsic factors and contextual influences (Amabile & Pratt, 2016; Amabile 1993; Pratt, Pradies, Lepisto, 2013). The original intrinsic motivation principle stated that people are most creative when they are primarily intrinsically motivated (Amabile, 1993). Even though some extrinsic factors in the form of

contextual influences, can enhance creativity it is shown that extrinsic motivation can also inhibit the creative process. Especially when people are viewing their work as: just a means to make a living, it shown that creativity is disrupted (Wrzesniewski et al., 2017). Amabile and her colleagues argue that intrinsic motivation is one of the key stimulants of creativity. This also illustrates the relation between meaning and intrinsic motivation, as intrinsic motivation is related to a person's work orientation (Pratt et al., 2013).

Nike's recent publication (Nike & Abloh, 2017) states that the way to creativity is paved by curiosity. Thinking of new ideas in an organizational setting requires a person to put effort into the creative problem-solving process, in which the person has to identify problems/ opportunities, search for information and generate ideas. To do this, people stand a better chance of thinking of useful new ideas when they devote more energy into identifying the problem from various perspectives, gathering diverse but relevant information to generate ideas and bring them to completion (Zhang & Bartol, 2010). Amabile's componential theory adds that a person's domain relevant skills, creativity relevant skills, and task motivation can help a person come up with creative ideas and are indicators of creative success.

2.1.3 Individual creativity: inspiration

Ancient philosophers like Plato and Socrates already shed light on the concept of inspiration (Nickolas, 2017; Capa &Andrea, 2015). It is evident that creativity is a form of inspired action, but what inspiration exactly is and where it come forms, remains a questionable topic. The Oxford dictionary of English defines " inspiration" as " the process of being mentally stimulated to do or feel something and specifically to do something creative. Previous research conceptualized inspiration as comprising three components: evocation, transcendence, and motivation (Thrash & Elliot, 2003) Inspiration is, first, unintentionally evoked by external or internal stimuli, Afterward, a sense of transcendence occurs, making the individual aware of more than his or her usual concerns, Finally, this awareness encourages the individual to actualize the evoked idea, transforming into motivation (Dongwy & Youn, 2018).

What is immediately interesting is that the first step of inspiration (evocation) is described as a natural process that arises unintentionally. The individual might or might not have control over what stimuli to elaborate on, yet in order for creativity to flourish it is important that the person is able to gather a variety of experiences (Batey, Chamorra-Premuzic, Furnham, 2009). A lot of people have talked about an 'eureka moment', as a touch of brilliance that comes from supernatural sources like a muse ("often described as mythological female figures who whisper about the secrets of the dreamworlds"). Even though both Plato and Socrates (Capa, Andrea, 2015) respected divine inspiration as an undefinable element, it is best believed that inspiration doesn't occur random. Research has shown that the evocations of stimuli are closely related to the personal experience, and thus the individual as a person

(Batey, et al., 2009; Nusbaum & Silvia, 2012). This again puts curiosity at the seed of creativity. It is a combination of being challenged to think outside the box and being open to new experiences (Trash & Elliot, 2003). This can be aesthetic experience like art (article art), educational experience like research trips (Catmull & Wallace, 2014) or, collaborative and relational experience like participating in multi-disciplinary projects (e.g. Adidas, Brooklyn Creator Farm). What specific experiences will lead to 'eureka moments' is hard to determine, yet in the light of creativity and creating new connections as a foundation of future value propositions it is important that a person is exposed to an un-regulated variety of stimulus (Wartiovaara et al., 2018). Especially when experience is related to personal meaning, motivation and personal development it has shown to be very effective for the flourishment of creativity (Anderson et al., 2014). "When you bring a diversity of thought, practice, and culture you have the ingredients to build something truly inspirational" (Nike & Abloh, 2017)

2.2 Collective Creativity

"Creativity is not a solitary endeavor" (Catmull & Wallace, 2014). Collective creativity depends on but is not a simple aggregation of, the creativity of the individuals in the team. Hagardon and Bechky (2006) Present a conceptualization of "collective creativity "arguing that, although some new insights arise in organizations that are truly the product of a single individual's mind, others arise from a momentary collaborative process among multiple individuals that is qualitatively different. This also addresses the multiplicity of creativity.

Within organizations, creativity is affected, by the highest levels of leadership, through the strategies they set, the structures and policies they establish, and the values they communicate (Amabile & Kramer, 2011; Grant & Berry, 2011). Creativity is also affected by all levels of management, through managers' in everyday practices in dealing with individuals, teams, and their projects. And individual creativity is affected by coworkers' everyday attitudes and behaviors, through dyadic interactions and team dynamics (Zhang & Barthol, 2010 ; Catmull & Wallace, 2014) Collective creativity occurs through the interaction and reconciliation of the personal perspectives that individuals bring to the organization (Hagardan & Bechky, 2006). Goncalo and Staw (2006) have studied the tension between collectivism and individualism and how it affected creativity within organizations. Based on their study they proposed that collectivism can promote the feeling of harmony and thus cooperation within teams. Yet if collectivism leads to the pressure of conformity within the organization, then it will potentially stifle creative ability. Thus, it is essential that the leadership within the organization prompts individuals to maintain their point of view in the face of opposition (Nemeth 1985 in Goncalo & Staw, 2006). The resulting diversity of ideas expressed and the tolerance of competing points of view should, over time, facilitate group creativity(Goncalo & Staw, 2006). These findings are supported by Catmull and Wallace (2014) in which Ed Catmull states that it is the responsibility of the leadership within the organization to facilitate a culture in which candor is protected. Candor refers to

the lack of restraint among individuals in the organization and their willingness to speak out and share their ideas without fearing the judgements of either their colleagues nor their management.

Traditionally, creativity is analyzed on the individual, team and organizational level (Woodman, et al., 1993). Organizational creativity is seen as the collision of individual creativity and collective effort, that leads to the production of new ideas (Hagardon & Bechky, 2006; Uwadia, 1999). The institutional pressure within the organization may ultimately influence group and individual creativity (Amabile, 2014). O'reilly and Tushman (2013) argue that more work could be done on studying the simultaneous influences of and interactions between individual and group creativity and ultimately, their joint influence on organizational innovation.

This work builds on three presumptions. The first presumption is that everybody has the potential to be creative- whatever form that creativity takes- and that to encourage such development is a noble thing (Catmull & Wallace, 2014) the second presumption is that Workforce quality is the foundation of innovation and stimulation of creativity and innovative capabilities are crucial for innovative success (Chang et al., 2018). And the third and last presumption is that managers have the ability to re-energize and re-vitalize creative workforce (Amabile, 2014).

2.3 Innovation in Teams

Creativity and innovation processes are complex, and they depend on individual and group effort. Johnson (2014) points out that a team can hardly handle all the complex work that they have to conduct without a proper set up when the team is formed. Literature on innovation in teams focuses primarily on newly formed teams, but it does illustrate the necessity of setting the stage for creativity and innovation and the influence it has on the processes of creativity and innovation. Mcdonough (2000) gives four elements that are essential to effectively set the stage for innovative operations, including: setting goals, empowering team members, establishing a climate, and the human resources of the team.

Goals. Establishing goals is essential for any creative and innovative endeavor. They provide project members with a frame of reference, which allows both understanding and promotes effective cooperation. Once there is a vivid understanding of the goal, sub-ordinate goals can be set, yet the superordinate goal helps structure the tasks, and in doing so, facilitate cooperation by keeping team members oriented towards the aspired outcome (Mcdonough, 2000). This also allows the members of the team to be empowered in their efforts to effectively work from their strengths (Pinto, Pinto & Prescott, 1993).

Empowerment. Goals are important to set boundaries within which teams can be empowered to effectively structure decision making (Mcdonough & Leifer 1986 in McDonough, 2000). Besides direction it gives individuals greater responsibility of decisions and actions, which makes them more

committed to the process and meeting its goals (Mcdonough, 2000). At the same time, it can lead to greater satisfaction among the members of the team. Besides the direct influence of empowerment on the process, it also affects the climate within the organization. When members of the teams are empowered, they perceive their work groups, the management, and themselves as more influential and, as a result a more innovative climate is created (Mcdonough, 2000).

Climate. The climate that surrounds the creativity and innovation process can play a fundamental role in delivering successful outcomes (Mcdonough, 2000). The climate is often consciously or unconsciously created by the management of the organization. The climate helps in creating a sense of urgency and in stimulating the feeling of excitement among members of the team. Both excitement and urgency have shown to be indicators of commitment within an organization (Amabile & Kramer, 2011). Commitment, trust, effective communication and effective cooperation are too a great extent decided within the selection of team members (Catmull & Wallace; 2015, Johnsson, 2017; Mcdonough, 2000). Overall it is shown that there is an essential importance of effective human resource management(O'reilly & Pfeffer, 2000).

Human resources. The capabilities of members of a team and the dynamics within the team represent a significant project resource (Mcdonough, 2000; O'reilly & Pfeffer, 2000). Brown and Eisenhardt (1995) propose that functional diversity within teams increases the amount of variety of information available during the innovation process. Variety among team members helps the team to understand the process as a whole and thus improves the potential outcome. Problem solving also seems to be enhanced by including individuals from different functional disciplines (Mcdonough, 2000). A multi-disciplinary team that finds good fit of its members has proven one of the most powerful resources for innovation. Besides variety one of the most essential characteristics of a team is the willingness to work towards a common goal (Amabile, 2014; O'reilly & Pfeffer, 2000). The most important thing is that members of a team actively come to agreements about the decisions being made (Brown et al., 2001).

These four variables precede the development effort itself, yet they also evolve during the process. This puts emphasis on the role of leadership in reaching a consensus between the various perspectives. This is supported by innovative organizational theory which proposes modern highly innovative organizations are built upon consensus and shared leadership (Liu, Chen & Yao, 2011). To realize the benefits of using teams as an integrative device, capable of balancing and reconciling multiple sub-goals, organizations need to communicate the priority of strategic goals to teams and give teams the authority and autonomy to resolve the conflicts and manage their progress towards these goals (Johnson, 2017). To do so, it required for the management to actively engage in trust building, the overcoming of fear-factors and appropriate training in new tools for employees and management (Johnson, 2014).

Effective leadership has shown to be extremely important for innovation (Johnson, 2017). Leadership for innovation requires a vision of where the company needs to go. This is more than just the desire to innovate. Leadership needs to lead the way in defining the innovation strategy and encourage truly significant value creation (Davila, Shelton, Epstein, 2006). Leadership must provide guidance on the types of innovation the organization should seek, where to explore ideas, how to create great value, and determine the significance of innovation (Tidd & Bessant, 2009). For innovation to occur, it is the challenge for the leaders of on organization to allow openness, yet also shape the innovation strategy in a way that selection is effective, and completion is established. The management of the organization should aim to neutralize organizational "antibodies" that kill innovation (Davila et al., 2006). "Most thriving companies don't die from their lack of ingenuity, but they become inerted through success" (Scott Cook in Khan Academy, 2013). It is therefore important that innovation is incorporated in the mindset of the organization and the individuals, because even success can lead to stagnation (Catmull & Wallace, 2014). Instead of creating a culture that builds merely on success it is needed to develop a deeper sense of belonging. The culture must sustain the willingness to learn, both on the personal level as the organizational level.

2.4 Innovative capabilities

Innovative capabilities refers to the ability of an organization to continuously challenge the status quo, and if executed successfully renew the status quo (Batey, 2012; Tidd & Bessant, 2009). It asks the company to look beyond borders and pushes the organization to break boundaries. It is important to understand that it is not only about separate successful projects, but more about the overall ability of a firm to convert invention to success. Several scholars propose that these capabilities can partially be structured and understood and partially need to be open and uncertain (Catmull & Wallace, 2014; Batey, 2012; Tidd & Bessant, 2009) . This research looks at innovative capabilities as a construct of mechanisms that is developed over time. For innovation to occur this means that members of the organization have to be open for experience that are not directly related to the daily operational routines. (Dongwhy & Youn, 2018). This is essential for original ideas and breakthrough to emerge. Ed Catmull (Catmull & Wallace, 2014), describes invention as 'something that you must enable to happen, instead of something you must attempt to create'.

When looking at creativity on the individual level it is clear cannot be easily understood because of its multidimensional nature (Amabile, 1988). When it comes to innovation it also needs effective coordination, -planning and discipline to turn collaborative effort to innovative output (Tidd & Bessant 2009; Koen et al, 2002; Davila et al., 2006). This asks for allocation of all resources ranging from tools, finance to human resources. This means that the innovative process asks for both divergent and convergent thinking but also for the effective management of these opposing efforts within the process (Tushman O'Reilly, 2013) . Many people who either researched thriving and 'innovative' companies or were on the frontlines of innovative endeavor refer to balance arguably the most important

objective. It is about dealing with uncertainty, uncovering limits, breaking them and sometimes respecting them (Catmull & Wallace, 2014). For this reason, the question of how innovation occurs is seen is not as relevant as the question about how to build a construct that allows innovation to occur and to bring it to success. From a management perspective this is not only about gaining in efficiency, but also about more abstract mechanisms like dealing with uncertainty, seeking meaning and cultivating it to establish positive moral and creative productivity. In terms of financial resource allocation for example, innovation requires exploring new opportunity and engaging in R&D efforts that can be costly without a certain outcome. When looking at it from a 'Go-to-market' perspective it offers not only the challenge to create the new but also to make it attractive and fitting with the market needs (Ries, 2011). Understanding the choices and improving the balance between exploration and exploitation are complicated by the fact that returns from the two options vary not only with respect to their expected values, but also with respect to their variability, their timing, and their distribution within and beyond the organization (March, 1991). This asks for a fluent process of transforming a wide range of ideas that result from creativity, into the needed operational efforts, while fine-tuning the products based on market expectations (Mumford & Mcintosh, 2017). For innovation, market expectations are not necessarily the current market needs. Potential outcomes of innovation projects are often not familiar in current markets. It is the objective to create a map for the future that is shaped through ideas and bringing them into reality (Tidd & Bessant, 2009).

2.4 Organizing principles

Organizing principles – "Fundamental propositions originating from experience and reflection of actors within the organization that structure and shape the future chains of reasoning and thus the direction of the organization" (Covey, 2017; Dalio, 2004).

For this research it was not the objective to provide a complete overview on all organizing principles, but to look into some of the most recurring principles in contemporary literature and reviews. This research aims to investigate the relevance and practical implications of these principles in order to better understand them and to find out how organizations interact with these principles. Three main principles are subjected to this research: 1.The meaning principle 2.The progress principle 3. The ambidexterity principle. Meaning in work, has shown to be one of the strongest indicators of creative flourishment (Amabile, 1993; 2014; 2016). From a work orientation perspective, it is shown that when people view work as an end in itself, they tend to be more creative and showing more successful creative effort (Amabile & Kramer, 2011, Wrzesniewski et al., 2017). This section will highlight the interaction between the organization and the individual and how the mission of the organization relates to individuals working for the organization. The second principle revolves around progress and the sense of progress within the process of creativity and innovation. By correctly managing the stimulating effects of progress, organization allow themselves to be more enduring and constant in their creative development, and thus over time better able to develop innovative capabilities (Amabile

& Kramer, 2011) This section will highlight the importance of institutional and collective effort to deal with uncertainty, failure and success. The third and last principle is the explicit management of ambidexterity. Ambidexterity is about managing the contrasting forces that are commonly identified as exploration and exploitation (Guildford, 1967; O'reilly & Tushman, 2011). This pleads for balance in efforts of divergent and convergent thinking. It stresses both the importance of dealing with limits, as the importance of creative openness. Creativity and innovation ask for being dynamic and open for new opportunity, while being able to respond and take advantage of new opportunities, yet it is equally important to guide the process in a way that implementation of ideas is successfully executed (Georgiev, 2012).

2.4.1 The meaning principle

Finding meaning in work is arguably the most important determinant of creative input of individuals (Amabile & Pratt, 2016; Pratt, Pradies, Lepisto, 2013; Brown et al., 2001) . On the individual level it is shown that meaning plays a critical role in establishing and maintaining positive moral in work. It shows that through meaning, and especially when a person views work as an end in itself, they are more willing to accept unpleasant tasks and experiences to fulfill their goals (Amabile & Pratt, 2016; Prat et al., 2013; Wrzesniewski et al. 2017; Liu, Chen & Yoan, 2011.). Consequently, Shalley, Gilson and Blum (2009) proposed that organizational culture should sustain the tendency to value personal development. Stimulating personal development is fundamental to stimulating creativity and engagement in challenging work (Shalley, Gilson, & Blum, 2009, p.491 as seen in Amabile, 2016). In return, this form of internalization of culture allows for more trust in individual effort and lessens the need for micro management. Even though effective management is crucial for guiding innovative effort and turning ideas into reality it has been shown that micro managing often leads to innovative stagnation (Amabile, 2014).

Cultivation of meaning revolves around the organizational efforts that are used to acknowledge personal development but also align personal incentives and motivation with organizational vision (Pratt et al., 2013). It is about leadership, emphasizing and transcending the vision of the company and aligning personal meaning with the overall business strategy (Amabile & Kramer, 2011). Research has shown that paying attention to, and valuing the individual allows creativity to flourish and is conducive to innovative success (Amabile & Kramer, 2011) In addition, it also creates a sense of belonging. The collective effort of the individuals combined, sharing a vision and constructing their common values is the foundation of the organizational culture (Catmull & Wallace, 2014). It is of critical value for the culture of a company to allow individual freedom to try their ideas without sacrificing their careers (Tidd & Besant, 2009; Catmull & Wallace, 2014). When the culture of a company values the individual and provide a degree of trust that he or she will do the right thing, accidental discoveries will occur. If the organization doesn't embrace the individuals, they are not likely to achieve their potential value. Ed Catmull (Catmull & Wallace, 2014) even names a beginning

idea an ugly baby, who need nurturing and care to evolve into a beautiful product. It takes a culture of encouragement to foster this transition (Amabile, 2014). Leadership and organizational culture have proven to prominent influences for creativity and innovative success to rise (Martins & Terblanche, 2003; Catmull & Wallace, 2014).

It is the task of managers to remove toxic behavior and reward creative effort even when it isn't directly paired with result. The values and actions that are needed to enhance creative effort are shaped and guided by leadership and internalized through culture (amabile 1993; Pratt et al., 2013). Although it must be noted that culture is dynamic, which means that every actor within the group has at least some influence on the overall construct (Dul & Ceylan, 2011). For a healthy 'creative' culture the dynamism and thus the influence of the actors will have to be balanced (Catmull & Wallace, 2014). Where the system must enable and respect personal potential, yet also keep personal development aligned with the goal of the organization.

2.4.2. The progress principle

(Amabile & Kramer, 2011) "the progress principle"—the discovery that work progress is a major determinant of psychological states that facilitate creative behavior. "Getting better at innovating happens one day at a time" (Davila et al., 2006). In order to establish breakthrough, there needs to be discussion and reflection on a daily level(Amabile, 2014). This is not just for the benefit of optimizing effort, but also for the reinvention of structures, routines, procedures, establish failing leadership and to allow the emergence of new initiatives (Amabile & Kramer, 2011; Grant & Berry, 2011). Amabile relates to this from the perspective of 'inner work life'. Inner work life is the confluence of perceptions, emotions, and motivations that individuals experience as they react to and make sense of the events of their workday. Although this research doesn't approach the mechanisms around creativity explicitly from this view, it is necessary to understand the consequences of everyday action and social interactions on creative activity. Amabile argues that catering a construct that amplifies small wins is the way to progress. In the "progress principle" (Amabile & Kramer, 2011) smalls wins are described as the champions of progress. She found that our own assessments of events objective importance are often outstripped by our own initial emotional reaction, therefore it is essential to structurally guide progress.

The progress principle (Amabile & Kramer, 2011) proposed that progress loops reinforce progress. A progress loop emerges if progress in work interacts with the process in a circular manner. Amabile and Kramer (2011) states, that positive perception of work leads to creativity, commitment and productivity which leads to progress, which brings positive experience of a day which then again contributes to the positive perception of work. It is also commonly stated that failure is an almost inevitable part of the innovation process, yet the learning experience allows the organization to experience progress even in the face of failure. Besides reinforcing positive experience progress loops

also allow people to re-examine actions and decisions and put them into perspective. At the kick-off of the innovation process it is essential to clearly define the objective of the endeavor (Mcdonough, 2000; Johnson, 2017). Within the process it can be difficult to indicate whether the process is heading towards the aspired innovative outcome. Therefore, Progress loops are needed to put actions and decisions into perspective (Plattner, Meinel & Weinberg, 2009). They allow for reflection between steps and thus make it reasonable to celebrate small wins. The method of design thinking illustrates this most effectively by emphasizing the interaction between iterations and the innovation process. Where the organization strives to innovate, it is very difficult to tell whether overall progress is made. Yet the method of iterations allows the people involved to reflect on versions of for example a product, instead of just chasing an innovative outcome.

Besides stimulating the process, the sense progress showed to have positive impact on the level of happiness among the people at work. It creates acknowledgement, recognition, and the feeling of personal significance (Prat et al., 2013; Wrzesniewski et al. 2017; Liu, Chen & Yoan, 2011). On the other hand, devaluation of personal input leads to creative paralysis, since it significantly lowers moral and thus intrinsic motivation. Innovating is often described as stepping into dark, because it is about exploring ground that might not have been discovered yet. This brings not only the challenge of executing ideas, but also to nurture a culture, in which individuals that work on innovation understand and learn how to deal with this uncertainty and failure (Amabile & Pratt, 2016; Catmull & Wallace, 2014). The progress principle shows that progress is one of the most evident and prominent factors in enabling and stimulating the creative force and innovative capabilities of an organization. It is even more than just about progress. In order to enable and stimulate the potential of creative force and allow innovative capabilities to accumulate, it is needed to create and enhance mechanisms of nourishment (Amabile, 2014; Batey et al., 2009). This happens during the daily occurrences and affects the by the day-to-day behavior of management and colleagues.

2.4.3 The ambidexterity principle

Every organization that is involved in the process of innovation is at some point confronted with contradicting efforts of divergent thinking and converted thinking (O' Reilly & Tushman, 2013). The process from idea generation, ideation, and implementation that ends in successful exploitation of what was at one point an idea, is a process that needs balance. The tensions between the opposing nature of idea generation and idea implementation are fundamentally connected to resource allocation, organizational adaptation (Lavie et al., 2010).

At a very general level motivation to innovate is strongly related and can even be viewed as a manifestation of the broader concept of "exploration". This is according to O'reilly and Tushman (2013) about an organization's ability to survive by adapting to competitive environmental pressures via the development of new capabilities rather than taking advantage of existing once ("exploitation").

Such new capabilities may both stem from and lead to innovation. Bledow, Frese, Anderson, Erez and Farr (2009) advocated ambidexterity theory to explain the process of managing conflicting demands at multiple organizational levels to successfully innovate. Ambidexterity refers to the "ability of a complex and adaptive system to manage and meet conflicting demands by engaging in fundamentally different activities (Bledow et al, 2009, p.320). When placing a positive connotation to ambidexterity, it represents successful management of both exploration (informal processes, search, discovery, engaging in diversified streams of information, idea generation, creating the 'new') and exploitation (e.g. formalization of process, production, implementation, optimization, enforcing routines, increasing efficiency of processes) (Revilla & Prado, 2018). In extreme terms the paradox is related to the tension between creativity and commerce. Even though, ambidexterity sometimes occurs in that specific form, it is a more overarching concept that leverages the importance of balancing opposing forces. Exploration asks for divergent thinking and experimentation, breaking routines to push the boundaries of organizational focus. While exploitation asks for discipline in following procedure and increasing the efficiency production to become more profitable (Steve Jobs in Tidd & Bessant, 2009).

When looking at this from managerial perspectives it brings to attention that specific mechanisms need to be created in order to create and maintain Balance. "Balance is often mistaken for stillness, while stillness refers to the lack of activity, Balance is about harmony and organizing effort in a way that the organization constant and dynamic at the same time"(Catmull & Wallace, 2014, p. 231). To some extent there is the possibility to separate opposing forces, yet in order for an organization to remain dynamic it has to be able to stimulate spontaneous effort, organic interaction and personal development. From the creativity perspective this is needed to maintain a high level of isomorphism (Nusbaum & Silvia, 2011). Ed Catmull emphasizes the importance authentic experience as the root of inspiration. He installed the activity of research trips at both Disney animations and Pixar, this for example can be effective to create authentic experience. Not only for the sake of gaining experience, but also to release the barriers that emerge through daily routine (Catmull & Wallace, 2014). Bledow et al.(2009) distinguishes between active management on one hand and self-regulatory processes on the other and suggests that both are required for the integration of activities performed by subsystems of an organization. Operationally balancing the different activities that require divergent thinking and then convergent thinking, ask for different levels of formalization of the process (Koen et. al, 2002; Georgiev & Georgiev, 2018). Creativity asks for openness and room for exploration, which can mean that there is no direct visible return on investment for certain activity (Sarooghi et al., 2015). The product of creative endeavor in the process of innovation is not a finished product (Guilford, 1981), it is more like a milestone that opens new opportunity, which can potentially be commercialized. In order to finish the process, the objective shifts in the sense that after the creative process, direction of the endeavor should be determined and then needs commitment and focus to be executed and eventually lead to commercial success (Koen et. al, 2002; Davila et al., 2006).

2.5 Research Questions & Conceptual model

The previous parts of this chapter explored the main concepts underlying this research. This section integrates these concepts into the questions and conceptual model of this research. The main question of this research is:

How does creativity influence innovation and what role do organizing principles play in this relation?

Four sub questions are formulated to dissect the relation between creativity and innovation, and to examine the role of the selected organizing principles: the meaning principle, the progress principle and the ambidexterity principle.

In previous literature (Amabile & Pratt, 2016; woodman, Sawyer & Griffin, 1993; Hagardon & Bechky, 2006; Catmull and Wallace, 2014) multiple linkages have been made between creativity and innovation, yet most of these scholars have asked for further investigation on how the different levels of creativity and innovation interact with each other. Leading to the first sub-question:

Q1 How does creativity influence innovation?

Three organizing principles are examined in this research:

Meaning in work is arguably the most important determinant of creative input of individuals and thus leads to more successful innovative endeavors(Amabile & Pratt, 2016; Pratt, Pradies & lepisto 2013; Brown et al., 2001). Leading to the second sub-question:

Q2 How does the meaning principle influence the relation between creativity and innovation?

Previous research has revealed that progress facilitates the psychological state that enables creative and innovative behavior (Amabile & Kramer, 2011; Amabile, 2014). Leading to the third sub-question:

Q3 How does the progress principle influence the relation between creativity and innovation?

Ambidexterity refers to the organization's ability to survive by adapting to competitive environmental pressures via the development of new capabilities rather than taking advantage of existing once ("exploitation") (O'reilly & Tushman, 2013; Bledow, Frese et al., 2009). Such new capabilities may both stem from and lead to innovation. Leading to the fourth sub-question:

Q4 How does the ambidexterity principle influence the relation between creativity and innovation.

Figure 2: Conceptual model

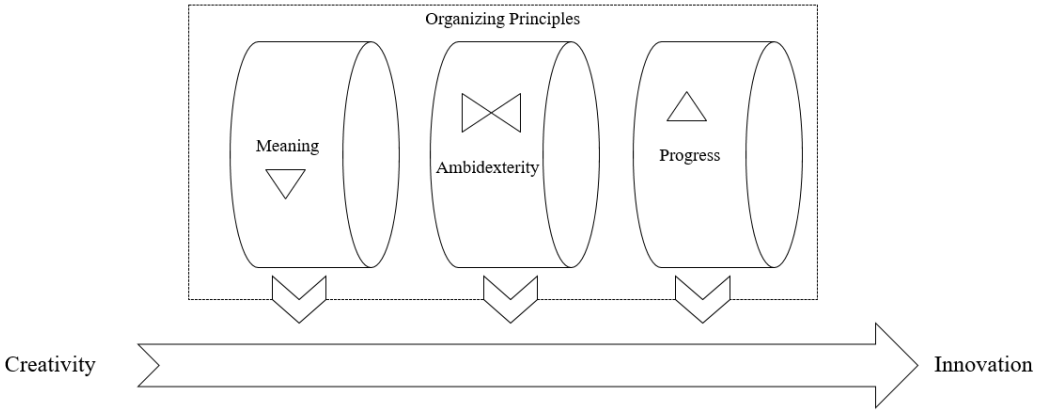


Figure 2 shows the conceptual model of this research. The first sub-question of this research revolves around the relation between creativity and innovation. The following three sub-question are focused on researching the moderating role of the meaning principle, the progress principle and the ambidexterity principle.

3 Research Method

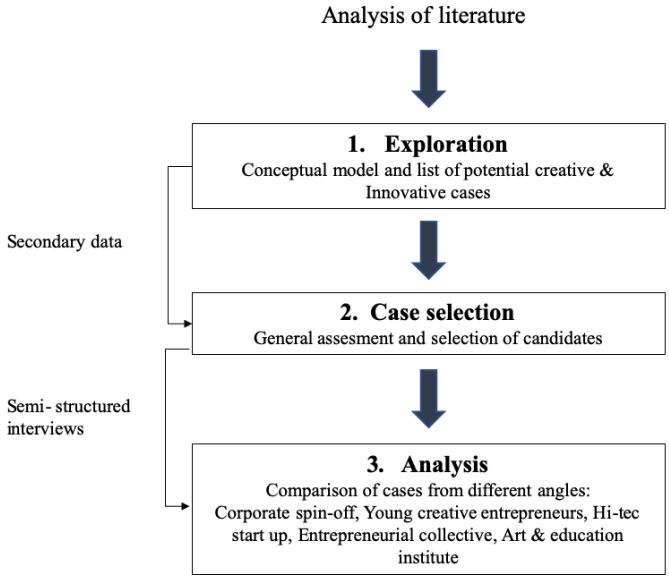
This chapter addresses the chosen research method and approach of this research. Based on the approach of this research it explains the choices for the design of this research, the collection of data the use of sensitizing concepts and how the data is analyzed. Lastly, the ethics of this research are covered.

3.1 Research Design

This research aims to investigate the relation between creativity and innovation, which are both processes that involve a high amount of social interactions, making them complex to thoroughly understand (Amabile, 1988, Woodman, Sawyer & Griffin, 1993). Given the multiplicity of this relation and the lack of qualitative research in the field of creativity and innovation, A qualitative method in the form of a case study is applied. This seems to be the most suited format because of the Multifaceted nature of mechanisms between creativity and innovation that involve personal traits, characteristics but also institutional pressures and other contextual influences (Yin, 2014). Case study is ought to be the most effective method, because it enables the researcher to gain rich understanding of the cases and to seek patterns and differences between the cases. Case studies typically combine data collection methods such as archives, interviews and observations (Eisenhardt & Graebner, 2007) This format allows the researcher to emphasize the contexts in which the phenomena occur, ensuring that the information collected is rich and genuine (Eisenhardt & Graebner, 2007).

This research looks to formulate an integral perspective on the relation between creativity and innovation within organizations. Figure 3 summarizes the overall construct of the chosen research design. Data collection is undertaken by conducting semi structured interviews and finding secondary data from online sources. The aim of this research is to find patterns in how organizations structure their creative and innovation process and how the organization constructs and internalizes organizing principles. The interviews will be focused on looking into, how these organizing principles stimulate successful creative endeavor and enhance the innovative capabilities of the firm. Three organizing principles are derived from pervious literature. By studying primary data and secondary data found online, about the cases an accurate analysis can be made how these organizing principles play a role within the studied organizations. Because of the multidimensional nature of this research it is best believed to have an authentic conversation about this topic, this is established by showing genuine interest in the experiences of the participants and allowing them to reason from their own perspective. It is believed that this inductive approach will enable the participants to engage in discourse about the researched topics. Discourse is needed to reach the wished level of synthesis and therefore this research requires an exploratory approach, allowing room for difference in interpretation of variables (Symon & Cassel, 2004).

Figure 3: research design



3.2 Case Selection

All cases were selected based on personal interest of the researcher. These cases variated in size and form, yet they're all trying to be thriving in the fields of creativity and innovation. The selected organizations range from small to middle-sized companies. It has to be noted that the organizations were partly selected based on practical considerations. Most of the participants were approached in real-life. They were selected because they either inspired the researcher through a presentation or through some of their work. Appendix G provides an overview of all organizations selected along with a brief description of what they all do.

Five organizations were selected for this research: 1. The New Originals 2.Circl 3.'De Mengfabriek' , 4. University of applied arts Utrecht (HKU) 5.Tic-Tag. This research is focused on organizations that aspire to be thriving in the sense of creativity and innovation. Therefore, there should be at least a specific focus towards the topics of creativity and innovation within the selected organizations.

The aim of the questions are to develop an integral perspective of creativity and innovation, from the perspective of a persons involved in the creative organization who have to deal with both exploration and exploitation. Therefore, the criteria of selection in term of selected participants are based on their occupation within the firm and their overview and responsibilities regarding both explorative efforts as exploitative efforts.

Figure 4 provides a general description of the selected cases, more information on the specific types of innovation can be found in appendix G.

Figure 4: Descriptive information on selected cases

Name of organization	Type of organization	Focus of organization	Location	Type of innovation
The New Originals	Start up	Apparel design	Amsterdam, NL	Social innovation, product innovation
Circl	Sustainable development center of (Abn Amro)	Sustainable development, platform for circular innovation	Amsterdam, NL	Circular innovation, Social innovation,
HKU	University of applied Arts	Education on art and economy	Utrecht, NL	Innovative behavior
Mengfabriek	Entrepreneurial collective	Breeding pool for circular innovation	Den Bosch, NL	Circular innovation, Social innovation
Tic Tag	Start up	Mobile experience, hardware development	Utrecht, NL	Product innovation

The New originals. (Young Creators)

Three friends that started their own apparel company. Their brand is built to inspire individuals to become more creative and challenge them to think out of the box. They combine social initiatives with the release of new products. For example, this year they have collaborated with Stedelijk Museum Amsterdam and Good times a skating collective and youth organization from South America.

They are currently working on several campaigns in which they collaborate with foreign organization. Within these collaborations they spread their Mantra “Creatives are the new athletes” in multiple different languages. They try to inspire and empower youth culture worldwide. The New originals bring social innovation, through their collaborations and apply product innovation in developing their own new garments.

Interviewed are the three founders: Eben Badu (Sales), Maru Asmellash (Marketing) and Rizky Lasahido (Design and Finance), who still have shared ownership and are together responsible for all activity of TNO.

Circl (Corporate Pioneers)

Circl emerged out of Abn Amro’s plans to accelerate the transition towards a circular economy. Initially they came up with plans to build a meeting and conference center (next to Abn Headquarters) that would have some sustainable features and would be used to connect people and organizations who are active within the field of sustainability. But along the way they shifted the conventional design, to a new design that would be completely circular. A core-team was assigned to assemble partnerships that would allow full circular methods of construction. But the circular nature in the building is not only part of the construction. They focused on four fields of innovation: 1 Material 2 Use of energy 3 Waste 4 social environment. The Circl project was established and executed in collaboration with Abn Amro, Architects Cie, TU Delft, Construction group BAM and the Urban Mining Collective.

Interviewed are, Merijn van den Bergh commercial director and exploitation manager. Malu Hilverink, co-initiator of Circl. she has been active as project leader for the circular building and is currently active as purpose manager. And Egidio Bundel, zero waste programmer.

Mengfabriek (Entrepreneurial collective)

Initiated by Buro Kade and the Conceptenbouwers and multiple other entrepreneurs, the Mengfabriek is an entrepreneurial breeding pod that breathes creativity and innovation. Located at the Tramkade in Den Bosch, the location offers an office- and collaborative space for entrepreneurs, with a focus on circular innovation. The aim is to create a platform that leverages the combined practices of circular innovation-oriented entrepreneurs forming a circular network of complementary entrepreneurs, ranging from start-ups to artists to cultural and educational institutions. The founders also host activities around urban transitions, social innovations and talent development.

Interviewed are, Michael Bol Co-initiator Mengfabriek and founder of Buro Kade and Kirsti Pol Co-initiator Mengfabriek and founder of Conceptenbouwers.

HKU (Art & Knowledge institute)

The department of art and economy at Utrecht’s university of applied arts, focuses on combining creative and artistic development with economic expertise and knowledge. As an organization the

HKU aims to stimulate and evaluate the process around creative endeavor and thus its innovative outcomes. As an organization the HKU educates their students to operate at the intersect of art and commerce. The studies range from Visual art and design management to Theater management. They focus primarily the management of creative processes and how to translate creative endeavor to commercial values.

Interviewed are Maurille de Smalen, Lecturer, writer and student supervisor and Nirav Christophe, lecturer performance arts and researcher creative performative processes.

Tic-Tag (Hi-tec start up)

Founder Pieter van Heersen was working on loyalty app named Kudoos. When working on the development of Kudoos, the organization found that there was a lack of hardware components that were universally used in mobile and product interaction. Out of frustration Pieter chose to found Tic-tag, a start-up with the mission to develop a smart tag that allows consumers to interact with products by use of their mobile phones. The smart tag is currently a unique stamp that activities a unique action when pushed on a smartphone screen. The tag mimics 5 fingers that together form a unique pattern. A product or location can be identified on the basis of this pattern. The business model of the company is based on providing clients such as retailers advanced customer data analytics. The printing of the Smart Tags is done in cooperation with the Karlsruhe Institute of Technology and the research institute InnovationLab in Heidelberg, Germany.

Interviewed are Pieter van Heersen – Founder and CEO of Tic-Tag and Onno van der Poel CMO of Tic-Tag.

3.3 Operationalization

To provide clarity about the variables and dimensions that are used in this research, figure 5 shows how variables and dimensions of this research are defined. These definitions were exclusively used for clarification purposes, during the interview a more constructivist approach was applied, to determine the practical definitions of variables in elaboration with participants. Based on the explorative approach of this research it was chosen to apply the main concepts of this research as sensitizing concept, instead of operationalizing the concepts into explicit details. Sensitizing concepts are constructs that are derived from the research participants' perspective, using their language or expressions, and that sensitize the researcher to possible lines of inquiry (Given, 2008).

Figure 5: definition of variables

Variable	Dimension	Definition
Creativity		ability to generate original and useful ideas over time by discovering, identifying and shaping new meaningful connections. (Amabile, 1988; Guilford, 1967)
Innovation		successful of implementation and exploitation of new ideas, introduction of successful new products, procedures and processes. (Tidd & Bessant, 2009; Anderson et al., 2014)
Organizing principles		Fundamental propositions within the organization that structure and shape the future chains of reasoning and thus the direction of the organization. (Covey, 2004; Dalio, 2017)
	The Meaning Principle	meaning of work on both the personal as the collective level. Addressing the importance of motivation, autonomy, leadership and culture that support innovation through constructive meaning and vision. (Amabile & Kramer, 2011)
	The Progress Principle	Work progress is a major determinant of psychological states that facilitate creative behavior. progress and the presence of progress loops can facilitate repeated iterations through the creative process even in the face of failure. (Amabile & Kramer, 2011)
	The Ambidexterity Principle	refers to balancing efforts of exploitation (research, discovery creating the new) and exploitation (production, commercialization, increasing efficiency, effective completion of products). Effectively managing convergent and divergent focused effort . (O' Reilly & Tushman, 2013)

3.4 Data collection

This research studies primary data based on semi-structured interviews and secondary based on online found sources, ranging from organization's archives to news articles about the researched organizations. Twelve interviews are conducted at five different organizations. All interviews were strongly inductive in approach without explicit a priori set themes. topic list (Appendix A) is used as a guideline for the interviews, yet every interview has been unique and consisted out of specific questions, based on the cases and the direction of the conversations. The approach of the research was not completely bottom -up, since interviews were structured based on the relations of the conceptual model, leading to the division into the components: 1. Creativity and innovation 2. The meaning principle 3. The progress principle 4. The ambidexterity principle. All interviews were conducted in Dutch, since all participants were Dutch natives.

3.5 Data analysis

In order to identify patterns and differences between cases template analysis is applied. Template analysis refers to thematically organizing and analyzing data. The essence of template analysis is that the researcher produces a list of codes ('template') representing themes identified in their textual data (Symon & Cassel, 2004). Based on the analysis of the data the researcher searches for common threads in the findings (Brooks & King, 2012). Excerpts from the interview transcripts were distributed into these four sections based on a system of color- coding and were then clustered to do selective coding. After that, all passages were selectively coded. This is also the moment where the data is translated from Dutch to English. All coding was done manually, which decreases the reliability of the research, yet it did allow the researcher to gain thorough understanding of the interviews. In the last step, all selective codes were analyzed in order to find the main themes of this research. The overview of these main themes can be found in Appendix E. These themes resemble the found patterns that describe the relations in the conceptual model.

3.6 Quality Criteria

This research aims to gain in-depth understanding of the underlying mechanisms around the relation between creativity and innovation instead of trying to compare a high quantity of cases (Symon & Cassel, 2004). Therefore, the quality of this research is gained by increasing internal validity by analyzing every case from at least two perspectives within the chosen organizations and by comparing primary and secondary data sources (Noble & Smith, 2015). This research is constructed based on the presumption that for creativity personal perception matters. It is within this personal space and the interaction with the organization were patterns are sought after. During the interviews and the remainder of the research there is a constant process of self-reflection, within the research evaluating

and re-evaluating gained information. reflexivity (the critical appraisal of one's own research practice) is therefore an important element of this research (Symon & Cassel, 2004).

Within the semi-structured interviews, several actions are undertaken to stimulate the authenticity of the conversation, for example most interviews started with a non-recorded introduction and a short conversation which allowed the researcher and participants to get comfortable and to briefly get to know each other. An important aspect of how this research is conducted revolves around the positionality of the researcher towards the research and participants. As stated in the previous section, all cases were selected based on interest of the researcher. The selection was therefore also related to the expertise, experience and prior knowledge of the researcher. This prior knowledge allowed the researcher to engage in more in-depth conversation about the creative and innovative process revolving around apparel design, circular innovation and product interaction technology etc. These are all fields in which the researcher has been working, or actively studied in the past.

The interviews are not undertaken in a controlled environment It was a conscious decision to conduct the interviews in the work environment (natural context), among the workers (if possible). This helped the researcher to experience and observe contextual influences within the business (Symon & Cassel, 2004). Instead of aiming to strictly maintain the structure of the interview, the researcher searched to stimulate synthesis within the conversation. This is done by using natural language and trying to approach the respondents in a natural way, allowing them to talk openly about their perception and experiences. The topic list (Appendix A) is used as a guideline for the interviews, yet every interview has been unique and consisted out of specific questions, based on the cases and the direction of the conversation. This is believed to be beneficial for the accuracy of understanding of the uniqueness of every case, yet it reduces the reproducibility of this research. This has been a strategic choice. To counter the lack of empirical foundation of findings, extra- time is invested in the interviews and extra notes (Noble & Smith, 2015).

3.7 Research Ethics

The qualitative approach of this research asked the participants to engage in a conversation about both organizational and personal matter. As described before, this research applied a personal approach which allowed the researcher to more effectively engage in the content of discussion. All participants were thus informed that the information collected within this research, would exclusively be used for researched practices. All interviews were recorded under approval of the participants upon the promise of discretion on private and sensitive information concerning their organizations. During the interviews no anonymity was guaranteed. All participants agreed to be addressed by name. All participants were given equal opportunities to answer, no distinction was made based on gender, ethnicity or job position. They were all approached with the question if they wanted to be part of the research and informed about the format and content of the research through email. None of the

participants were pressured in the process. All participants were treated with respect. All participants engaged in the interviews on voluntary basis, most participants even added that they enjoyed being part of this research and some even added that they were inspired by the conversations.

4 Results

This chapter will discuss the results of this research based on the found secondary data and the findings derived from the conducted interviews. This section is divided based on the main concepts of this research.

4.1 Creativity

In this section the findings on creativity will be discussed. Firstly, creativity will be covered, starting out with findings on individual creativity, followed by findings on collective creativity and the importance of the creative environment. In addition, creativity as a process will be analyzed to develop better understanding of how creative ideas are sparked and eventually lead to creative output and creative performance.

4.1.1 Individual creativity

The results show that at least to some extent creativity is dependent of the individual. As described by Pieter (Tic-Tag):

"Creativity is personal, one person is more creative than the other" – Pieter Tic- Tag

He added that some individuals are better in shaping new relations others and in addition some individuals were better in relating knowledge to visualizations, new concepts etc. This was acknowledged by some participants, but others mentioned that there is always the possibility for any individual to engage in creative effort. As stated by Maru (TNO):

"Everybody has the ability to learn something new, what is important that you are willing and able to defend what you think is cool"

Furthermore, creative capabilities of individuals were described as dynamic and could evolve over time. Mentioned indicators for individual creativity were intrinsic motivation, creative discipline, willingness to engage in challenging work and the ability to breach personal mental constructs.

Intrinsic motivation. It was confirmed in all interviews that intrinsic motivation strongly contributed to the creative capabilities of the individual. Two forms of intrinsic motivation were most often mentioned. Firstly, most participants engaged in their work because they experienced enjoyment and satisfaction, some even described their career as an adventure. Their work showed to continuously spark their curiosity and thus led them to search for new insights and opportunities. Secondly, some participants stated that they felt a certain urgency to engage in their work. This was especially the case in the people that were working on sustainable innovation and social innovation. The urgency to create positive impact for the world and the people who live in it, led them to search new creative solutions and alternatives to common practices. These findings support the work of Amabile (2011) on meaning and work orientation, in which it is proposed that people who perceive their work as an end in itself tend be more creative than others.

Creative discipline. What was recognized among most participants is that they had a strong internal drive to create. Creative discipline is about consistently investing in creative capabilities by putting skill to practice every day. As described by Eben (TNO):

"When you compare it to athletes, Cristiano Ronaldo for example. When it became late, most kids left the field and went inside. But he went on and practice for three extra hours. If you do that every day, imagine the difference it makes in a year. And I believe it's the same for creatives."

It was mentioned that just like with anything else, to become better you need to train your skills. Most participants were constantly looking for new ways to create. Most of the participants even worked overtime practicing their craft. When visiting TNO for example, all three founders were moving from their store, to the office, to events etc. Even though their work method didn't seem too structured, they were constantly engaging in their work, but also searching for new experiences and elaborating on new opportunities with each other. This was similar in the case of Circl, where all participants had regular daily working schedules, but also hosted programs for knowledge sharing in the evening. What seemed to be key is that during their work they effectively balanced relaxation and highly focused effort. Although some cased indicated that it is still very important to focus on maintaining this balance, because otherwise it will ask too much from the individual.

willingness to engage in challenging work. Creative activity is often a highly ambiguous and thus brings an amount of uncertainty in the process. This was commonly acknowledged to be challenging. Therefore, the willingness to engage in challenging work, also mentioned by Amabile (Amabile, 1993; Amabile & Kramer, 2011) showed to be a key indicator for creative flourishment. Interestingly, multiple participants expressed that they felt a personal challenge to engage in their work, honestly admitting that they were not completely certain about being able to effectively execute the task. In a sense it could be perceived as a certain humility towards the tasks at hand, and thus it asked the individual to learn and to develop one's own capabilities. Upon the activation of personal learning and the search to develop new capabilities a lot of creative behavior emerged. Two concepts were addressed by the participants. The first concept is about the fact that every individual character is shaped by mental constructs based on past experiences, lessons, habits, cultural influences etc. Which largely shape personal perception. In order to access one's creative potential, the individual should seek to breach the barriers formed by these mental constructs in order to be open for new experience and approach knowledge in new ways. As described by Maurille:

" People are often stuck, in their own script based on what they have learned, and that really veils their creativity"

She added that when people are able to break their script or able to see past their own script, they will create openness for creativity. The second concept of breaching personal mental constructs refers to the relational aspect of creativity. In order for an individual to be creative, one should be open to outside experience and different perspectives outside of one's personal perception. Most participants

acknowledged that the most creative ideas arise through the amalgamation of multiple often completely different perspectives. Nirav, who writes his own plays gives an example from his personal experience:

"I've been writing plays for a while now, and most of them I wrote with another man, and well, I can honestly say that you probably couldn't have two more different views than we did. But that is exactly what made it work"

4.1.2 Collective creativity

Even though some individuals are more creative than others, creative performance is rarely the product of a single individuals mind (Hagardon & Bechky, 2006). Instead most participants stated new ideas or creative solutions emerge from the interaction between different members within the organization. And even if a single individual comes up with new insights, it is still influenced by the interactions and relations within the working environment. Interestingly, in contrast to Pieter (Tic-tag), Onno(Tic-Tag) described creativity more from a collective perspective. As stated by Onno:

"Giving people trust to work from their talents and strength, then they will feel that they can contribute and that allows creativity to emerge"

Multiple participants added that it is the key to identify strength and weaknesses of individuals involved in the creative process. Recognizing strength and weaknesses, allows the organization to distribute tasks and in ways that individual skills and expertise are complemented by co-workers. Nirav (HKU) adds:

" It is very convenient to have somebody in a group that regularly tells the rest, this is how much time we still have, this is too expensive, and how are we going to plan it? That's really convenient. But if everyone in the group acts that way, there will be no creative process. This also works the other way around, it is very convenient if there are people in the group who tell the rest, let's just do it, let's just try. But if everybody acts that way, there will be no creative process."

Collective creativity puts emphasis on the role of management and leadership within the organization. Effectively managing creativity seemed to be a delicate task. It was commonly acknowledged that both space and structure is needed, but too much space will not effectively lead to results and too much structure inhibits the process. Especially micro management was often mentioned as a strong inhibitor to creative flourishment. Most participants didn't like to use the term manager. For example, Merijn (Circl) who officially is the managing director of Circl, referred to his function as the team captain. Where everyone in the team had his own strength, it was his most important quality to recognize these strengths and to determine what was needed to evolve as an organization.

Lastly, the participants commonly addressed the value of positive affect within the organization. Negativity among members of a team, seemed to have a strong negative effect on creativity. Where positive behavior and appreciation among members of a team, led to more creative thinking and enhanced the willingness among members to get to reconciliation of perspectives. In the case of Tic-

tag it was mentioned that more time needed to be spent on team building and bonding with team members, as both had experienced the positive impact of team building and bonding on the creativity of the team.

4.1.3 Creative environment

The visits to the workspaces of all researched organizations revealed the importance of the creative environment. All organizations were in some way surrounded by other innovative organizations. TNO was surrounded by other creative companies, they shared an office with another creative label, and they shared their store with three other brands from Amsterdam. During the interviews they mentioned the added value of being surrounded by other creatives. Circl was located in the center of the corporate heart of Amsterdam, surrounded by several corporates. Additionally, a lot of organizations are invited to Circl, this means that Circl itself has created a creative and dynamic environment to operate from. The Mengfabriek is a coalition of several entrepreneurs focused on circular innovation. This creates the possibility of interactions between the entrepreneurs of the Mengfabriek. At the center of the HKU students of different disciplines meet up and have the possibility to showcase their work and projects. And lastly Tic-tag is located at the innovation hub, which allowed the possibility of creative interaction, yet the interviews pointed out that they weren't necessarily able to leverage their position within the environment. Being able to leverage the creative environment showed to be an important aspect of how the creative environment contributed to creativity within the organization.

4.1.4 Creativity as a process

The findings show that the creative process largely revolves around identifying elements that influence or shape either a product or an assignment and about recomposing those items in new meaningful ways. Studying the cases showed that two forms of the creative process can be identified. This research refers to those processes as inside-out focused and outside-in focused. The inside out focused creative process starts with the vision and goals of the organization, and from there the organizations aims to identify opportunities emerging from interaction within the organization or opportunities arising within the contextual environment of the organization. For example, in the case of the TNO where the organization has the vision to inspire creatives and to enable creative development. Based on their vision they seek for opportunities and to initiate and engage in new projects or processes of product design which are built around their vision. As described by Eben (TNO):

"We try to provide a platform for creativity. And to collaborate with creatives and creative organizations. Together you can look how to create new things."

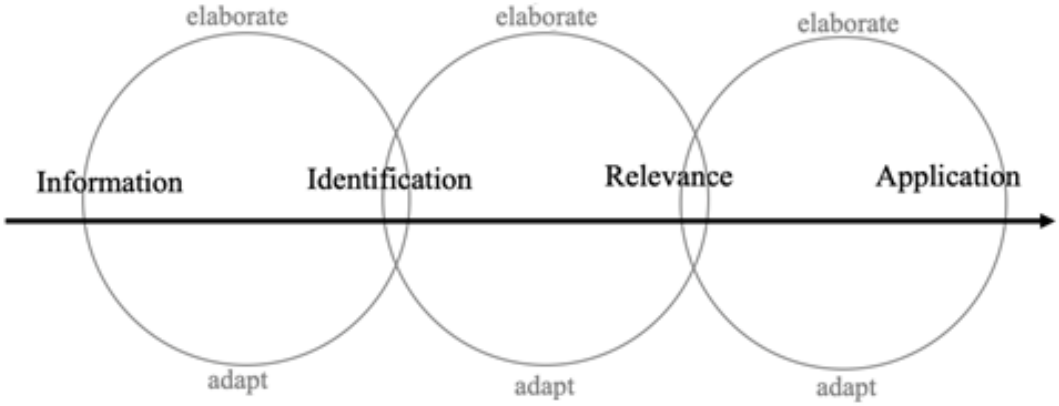
The Outside-in focused creative process is based on solution seeking. The organizations encounters or identifies a problem and aims to find a new solution to the problem. For example, in the case of Tic-Tag. The founder of Tic-tag initially started a loyalty app but found that there was a lack of universally used hardware components for mobile interaction. This sparked his search on how to develop a new

hardware component for mobile interaction. What differs between inward and outward focused organization is that the outside in focused processed were often more formalized and needed more structure since there was a more vivid end goal. As described by Pieter (Tic-Tag)

" *At the start you can have chaos, because you need to be creative, but further in the process you need to be more structured because you have to actually develop the product*"

The inside out focused creative processes were often more open ended, and based discovery of opportunity. For these processes a goal is set at the initiation of a project or campaign but is also shaped within the process. Most participants did add that the creative process needed openness and structure throughout the whole process. Even though the different processes can differ in how they are structured and the extent to which they are formalized, all processes seemed to be composed out of some similar steps. Figure 6 shows the steps that were identified based on analyzing and comparing all cases. The circles between steps illustrate the elaborative and adaptive nature of the creative process.

figure 6: construction of the creative process in organizations



Information. It was commonly acknowledged within the cases that creative effort needs input in the form of information. As stated by Eben (TNO):

"So, I try to approach it like, information, information, information, information, conclusion"

This refers to knowledge and expertise about the domain surrounding the creative effort. Information is also related to experience and inspiration. Gaining information was shown to be an essential part of the process. In order to come up with a variety of ideas, most participants followed their interest and engaged in discovery of new knowledge. It also showed to be essential to allow individuals in the organization to continuously engage in new experiences. Studying art, meeting new people active in the domain of the creative endeavor and travelling abroad were mentioned as experiences that strongly contributed to creativity. Gaining information was the first step in identifying opportunities for new creative endeavors. These opportunities refer to new ideas, for example the design of products, or collaborations and activities that will potentially lead to invention. In the inside out focused processes,

this information mostly represented the assessment of strengths and capabilities of individuals within the organization and opportunities that emerged within the contextual environment of the organization. In the outside in focused processes, the information was mostly about creating an overview of what was needed to meet the demand or to accurately see what a new solution should provide. As described by Michael (Mengfabriek):

" *And that's what I often encountered in the questions that I was asked. There was a flat question, but when you really shine light on the case then you find that they are actually looking for a completely different solution"*

Identification. Based on the information gained, as input for the creative endeavor, the participants consciously and subconsciously determined what opportunities sparked their interest and feeling. Identification relates to the personal perspective and intrinsic motivation and to the vision and goals of the organization. It is about identifying what new information galvanizes a feeling that matches the intrinsic motivation of individuals and the goals and vision of the organization. As described by Merijn (Circl):

" Allowing space to follow that feeling, I believe that's the holy grail and that's captured inside creativity" –

Most participants stated that it was very important to accurately see what opportunities matched the vision and goal of the organization. It was commonly acknowledged that the lack of engaging in new opportunities, will lead to creative stagnation, and the lack of alignment with the set-out goals of the organizations, will make the organization overly reactive to outside forces. Most participants acknowledged that identification with new opportunities was largely based on feeling.

Relevance. Based on the identified new opportunities, a selection has to be made on what opportunities to actually engage in. Most participants referred to significance of impact and timing as the most important criteria for selection. Even though feeling was a strong predictor in whether an organization decided to engage or not to engage in new creative endeavors, the organizations also looked at the contribution of an idea to the overall course of the business. timing played an important role as well, because it often was necessary to determine whether the organization had the capabilities and resources to engage in new endeavors. As stated by Eben (TNO)

"I believe that opportunities come, but they also go, so it's really important to look at these opportunities and to determine whether it fits into what we're doing at that moment"

These decisions were most effectively made by evaluating data based on previous performance and market research combined with relating the importance of focus in the activities of the organization to the need for exploration.

Application. Once ideas are selected, execution of ideas follows. Within the creative process this often is not a completely unambiguous effort, because it is still often exploring new grounds. The participants mentioned that execution is often characterized by effectively applying skills and expertise, making prototypes and continuously making adjustments. Furthermore, it was commonly

stated that creativity is not only about generating ideas, but also about finding creative ways to execute these ideas. This refers to the use of resources but also the development of skills of individuals, applying new efforts and learning new ways to apply their abilities.

The creative process is dynamic in all steps. Elaborate and adapt refers to the iterative nature of the creative process. The creative process is characterized by explorative effort, and thus asks for elaboration and adaptation between steps. All participants mentioned that even though the process needs structure, it also needs elaboration and adaptation, to effectively deal with the ambiguity that occurs when searching for breakthrough (Amabile & Kramer, 2011; Tidd & Bessant, 2009).

4.2 Innovation

In this section the findings on innovation will be discussed. In order to understand the findings on innovation it is important to understand the nature of the specific innovative effort that occurred within the cases. Therefore, this section will start by addressing the different forms of innovation within the cases. Afterwards, it will be discussed how innovation was often perceived as recombinant innovation, followed by discussing innovation as a mindset and innovation will be analyzed as a process.

4.2.1 Forms of innovation in cases

Within the cases several forms of innovation were recognized. A complete overview per organization can be found in table 1 and a more extensive description of the cases can be found in Appendix G. Circular innovation is a specific addition even though it can involve product innovation, yet for correctly understanding the innovative focus of Circl and the Mengfabriek, circular innovation will be discussed separately.

Product innovation- is the creation and subsequent introduction of a good or service that is either new, or an improved version of previous goods or services (Harvard definition). Both TNO and Tic-tag are primarily focused on product innovation, yet both cases are completely different in their approach. TNO aims to innovate through new designs, by experimenting with graphic design, color, material, patterns etc. Their approach to innovation is opportunistic and they are constantly searching for new ways to improve their productions. Tic-Tag on the other hand is focused on developing their own hardware component, which is a more intensive process of the development of a single product innovation.

Social innovations- are new social practices that aim to meet social needs in a better way than the existing solutions (Harvard definition). TNO leverages the youth culture they created as a following of their brand, to engage them in societal projects. Circl is built on inclusiveness, allowing individuals and organizations to learn and engage in circular development. As a platform for circular innovation they function as a bridge between the corporate sector of Amsterdam and external organizations and individuals. The Mengfabriek allows entrepreneurs to interact in a space designed for the development of circular innovation, emphasizing sustainable opportunities within construction and social

development. All of these organizations seem to either directly or indirectly focus on social development.

Circular innovation- revolves around designing with used material and waste streams, but also by applying new methods that allow recurring use of resources (Achterberg, Hinfelaar & Bocken, 2017). Both participants from the Mengfabriek stated that even though the use of material and new design efforts is important, it is also about reshaping value chains to allow more effective use of knowledge and resources in order leverage shared value creation. As described by Michael (Mengfabriek):

"The value that can be gained in construction around circularity, to me resides mostly in the fact that you have to align effort in a circular way. I'm talking about the relations that different entrepreneurs and products can have. That's about smart delivery, but also the techniques of distribution etc. that's where you can make the difference."

This was acknowledged by the participants from Circl, who often referred to innovation as the product of collaboration.

4.2.2 Recombinant nature of innovation

When asked about the nature of innovation, almost all participants acknowledged that innovation is not necessarily about inventing something completely new, instead it was often referred to as a new combination of old components which are applied in a new domain. As illustrated by Merijn(Circl):

"I am for example really proud of tikkie, which is a product of the bank. Which is completely based on existing technologies. But we were able to use those technologies to unburden consumers and to increase electronic payment convenience".

This is in line with the theory of Hagardon (2003) who proposed that innovation occurs by untangling ideas from their current context and putting them together in new ways. Hagardon emphasizes that genius lies in the ability to see how two things that nobody else sees as related are related. This indicates that creativity is directly related to innovation, because it largely revolves around the ability to create new meaningful connections. In the case of for example circular innovation a lot of innovation arises by finding new purposes to old and used materials. Instead of trying to reinvent the wheel, it was commonly recognized that it is best to look at the components which are in place and try to combine them in a way that is not done before. An interesting addition was made by Michael (Mengfabriek), who argued that for sustainable innovation the best efforts often revolved around adding nothing new.

4.2.3 Innovation as a mindset

The participants stated that innovation is not only about physical creations or the implementation of services. It was mentioned that innovation in itself is a way of working and revolves largely around the

mindset of people within the organization. The innovative mindset was often described as key for galvanizing change and thus innovation to occur. There were some recurring statements on this innovative mindset. First it was often recognized that individuals should be open to take risks and should understand that failure is an essential part of the innovation process. Risk avoiding behavior and the fear of individuals to lose their job will inhibit them to try anything new. As described by Onno (Tic-Tag):

"When people have the fear to lose their job, they will only do, what they think is expected from them and will not try anything new".

He adds that giving people the trust and space to develop their selves is the best way to enable individuals to engage in innovative practices.

A second aspect of the innovative mindset is about the willingness to embrace uncertainty and to engage in the process while continuously learning along the way. This is related to the concept of pivoting, presented by Ries (2011). Pivoting refers to the act of engaging in a process while shifting strategy and direction based on new findings. At Circl, this approach was put to practice when the team and the board of directors last minute decided to replace their conventional design for the Circl building, with a new design based on sustainable impact. At that time there was no exact plan on how to create and deliver this new circular design. They came up with a new plan in a relatively short time period and engaged in the project with the mindset to learn as much as possible along the way. As described by Merijn (Circl):

"We decided to completely focus our actions on making sustainable impact, which is vague, but it was specific enough to assess whether we were taking the right actions"

Not everything worked at the first try, but they were able to come up with an almost completely circular design, which was made possible through numerous small innovative solutions which they developed with their partners.

A Third frequently mentioned aspect of the innovative mindset was the holistic approach to innovation. The participants stated that innovation rarely involved the change of just a single component within the organization. In the cases, the innovative endeavors often showed to influence multiple processes and even the core business of the organization. As described by Malu (Circl):

"Just look at our transition towards circularity, it not just about building better, it asks us to think differently about how we use are resources, it asks us to organize differently and to change our business model, all those things are needed"

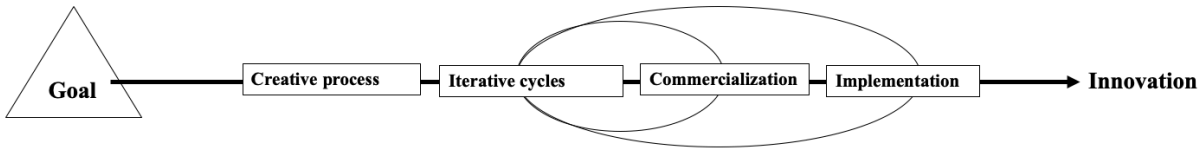
This illustrates how their innovative direction asked them to change multiple facets within the organization. On the other hand, Tic-tag shows how their innovation potentially affects the industry of retail. Up until these last years, people had no sense of digitally interacting with physical products. Tic-tag decided to partner up with Countr, an organization that focuses on shopping experience,

because the emergence of product interaction technology, potentially changes shopping experience as a whole. The participants stated that to make innovation work it is essential to understand what components within the organization and within the industry change along with the innovation.

4.2.4 Innovation as a process

The most acknowledged difference between creativity and innovation was that innovation has to serve a function, and the innovative process should be effectively guided towards a clear goal. Even though creativity and innovation are separate variables within this research, the findings did show that creative process is an essential part of the innovation process. The innovation process starts with a goal, which was recognized by the participants as either a single objective or an ambition plan with multiple objectives. From setting the goal to the execution of the innovation four phases within the innovation process were identified based on the findings. Starting with the creative process, followed by a phase in which ideas are tested through iterative cycles, during these tests the ideas will be tested on commercial features and if they can be implemented. The last two phases are the actual commercialization and implementation of the ideas which results in the innovative outcome. Figure 7 shows the construction of the innovation process in organizations. The process is separated into four consecutive steps. The iterative cycles represent the findings, that commercialization and implementation are most effectively executed when they are continuously tested.

Figure 7: construction of Innovation process in organizations



The innovation process commonly started divergent, yet participants stated that during the process it needed to be more structured to get towards execution.

As mentioned before the innovation process starts with setting the goal. The goal has a crucial function throughout the whole process because it provides project members with a frame of reference, which allows both understanding and promotes effective cooperation, keeping team members oriented towards the aspired outcome (Mcdonough, 2000). Once the goal has been set, most participants referred to the importance of creative input and creative effort to generate and select ideas and to identify opportunities. The complete dissection of the creative process can be found in figure 6. All participants acknowledged that every innovation process needs creativity at the beginning. To some extent it is also needed later in the process, but all participants acknowledged that at least at the beginning there needs to be creative enough creative space. As Pieter (Tic-Tag) described:

"creativity alone won't do it, but you need this creative chaos to come up with the right ideas"

And Merijn (Circl) adds:

"Innovation is about not compromising, at least in the beginning, of course later on you need the structure to execute it and you might need It guys, but that will follow. At the beginning it is important to not compromise"

Once the right ideas and possibilities are selected, most participants emphasized on the importance of testing these ideas. In the case of Tic-tag testing allowed them to align their technological development with the needs of the users. Other participants also implicitly applied principles from design thinking(Platner et al., 2009) and lean theory (Ries, 2011) by making use of iterative cycles to step by step adapt and improve the innovations (Appendix C). This was often done by testing ideas together with partners and even consumers, in this way it allowed the organizations to effectively commercialize and implement the innovations along the way. As described by Malu (Circl):

"Innovation is not about inventing something behind the walls, it is about interacting with other individuals and organization and developing the innovation together, along the way you will gain the insights you need."

Eventually for the innovation to be a commercial success, somebody will have to pay for it. This often seemed to be challenging, because innovation, as participants mentioned often goes beyond the direct consumer demand. A commonly used approach within the researched cases was creating a sense of awareness around the innovations through programming. Programming was used to inform people about new possibilities, but also to test whether a certain development gained leverage among consumers and other organizations. As illustrated in the case of Mengfabriek:

"*We really focused on programming for the city. We are developing the method of place making and that's also how we initiated the Mengfabriek. But we also hosted Robotenparties, City beaches, and other events, to eventually get to find real demand within the city and to show the potential of these places*" *– Michael (Mengfabriek)*

Implementation was also commonly described as a collaborative effort. In many cases the organizations leveraged outside expertise and combined it with their own to effectively implement innovations. Key in this approach was again applying iterative cycles. For TNO this meant, releasing smaller editions of innovative products to gauge the interest of consumers. Onno (Tic-tag) stated that the best thing they did was more testing. They applied survey's, panels and customer experience tests to find out how their product could be advanced and applied in the different markets they were targeting. For Circl, the goal was to make impact, and the participants mentioned that they were willing to try new solutions, even if they were not fully certain if the innovation would work immediately. At the moment of the interview, Merijn (Circl) addressed that some of the innovations that were already implemented were not working as they would like it to work. But it were still steps towards operating more sustainably. Where implementing an old system would have been working more efficient, it would not bring them closer to their objectives.

A difference between cases was found in the level of formalization of effort within the innovation process. The case of Tic-Tag exemplifies a case in which the organization is focused on a single yet extensive product innovation. Tic-tag's innovation process, although no explicit reference to the model was made, was organized based on the key principles of Cooper's Stage gate model (appendix D). Where the process consists out of steps of development testing and readjustments which all eventually leads to the launch stage of the product. This approach seemed to be most effective in 'long term' innovation process which are focused on a single innovation. Most other cases were more focused on increasing their innovative capabilities to initiate and implement multiple smaller innovations. And thus, their ability to continuously recognize opportunities and converting those opportunities to innovations seemed more relevant. The case of Tic-tag showed to demand an increasing formalization of the process, where the other cases asked for more openness and creativity throughout the whole process.

4.3 Relation between creativity and innovation

In all interviews it was evident that creativity highly contributed to the innovative success of the researched organizations. This section will address the actual found mechanisms on how creativity can lead to better successful innovations.

Importance of the creative individual. First it was recognized that creativity on the individual level is needed to generate new ideas. Multiple participants explicitly referred to "creatives" as the ones that come up with ideas. As stated by Merijn(Circl)

" I believe that innovation will come from those creatives"

And Pieter (Tic-tag) adds:

"Corporates will need a creative person to shake things up"

Even though this doesn't mean that creativity is a solitary act, it does emphasize the value of highly creative individuals. It was also commonly acknowledged that stimulating creative potential will lead to the production of inventive ideas. In addition, multiple participants acknowledged that creative thinking, which was described as questioning the status quo is the seed to applying innovation as a mindset.

Recombinant innovation is a direct product of creativity- The recombinant nature of innovation describes that innovation revolves around identifying new connections between already existing components, this leads to the perception that creativity is the primary antecedent to innovation in the way that creativity could be defined as establishing new meaningful connections. Michael (Mengfabriek) described creativity as:

" Creating an overview of actors and components within a domain and to understand how they interact, from that understanding you can reconfigure the lines between these components."

As stated before, innovation revolves around creating a holistic understanding of how different organizations enact within an industry and the understanding of what value is actually created. Thus, creating an overview of opportunities and figuring out how to reconfigure the lines in between again places creativity at the root of innovation.

Collective creativity is the foundation of the organization's innovative capabilities. Innovation was often referred to as the product of fusing opposite perspectives, combining different expertise and applying it in a new domain. Malu(Circl) mentioned that innovation is about crossing boundaries, where one person brings in a certain expertise another person can add different own perspective and expertise, which can lead to new dimensions of creation that surpasses separate potential . Nirav(HKU) added that most innovative outcomes emerged out of the amalgamation of the most opposite perspectives. What showed to be key was to assemble groups of people that differed yet worked together in complementary effort. This also emphasized the role of the convener. Merijn (Circl), described that as a captain of the team it was his task to get the best out of people, and to make sure they functioned as a team. These findings show that innovation often emerges through creative activity, which revolves around the reconciliation of different perspectives. The overall findings showed that ability of the organization to leverage collective creative is potentially the most important indicator of innovative output.

Creative environment & Collaboration - The findings show that creating an in and out flow of perspectives, skills and expertise, strongly contributed to the creative capabilities of the organization. Innovation was commonly referred to as an activity that only involves the organization and consumers but also other organizations active in the contextual environment of the organization. The findings show that collaboration was used to access external expertise and skills but also to add leverage to the innovative endeavor. Additionally, findings show that a creative environment can contribute in engaging in collaborations, yet this is only the case when the organization knows how to leverage their environment. In the case of TNO collaboration played a central role in their focus towards innovation. As described by Eben (TNO):

"you are basically like a bird, that tries to use the wind. You are the bird, the people around you are the wind"

TNO approach to innovation is all about leveraging collaboration to create new opportunities. Collaboration allows them to tap into new fields and they add their own perspective to it.

In the case of Circl the whole plan around the building was initiated and executed in collaboration with multiple external organizations. As described by Malu (Circl):

"But the first step is to assemble different knowledge and expertise, and search for collaborations, with the TU delft, with Luuk Kramans, he was extensively researching circularity and when you get together with this people and their knowledge, then you start translating it to practice.".

Other participants stated that as an organization it is mostly beneficial to be open for outside input, yet it does bring the challenge of not becoming too reactive to external forces.

Creativity vs Focus- Even though creativity was by all participants acknowledged as essential for innovation, the participants also stated that at certain points in the innovation process, it is at least as important to effectively focus effort. Once ideas are established and selected, focus is needed to implement the innovation. This will ask a different form of thinking and action, which enables the actual execution of the innovation. The findings showed that these roles are often divided between different people. Some participants added that overly focusing on creative effort might lead to confusion and the lack of clear direction. Multiple participants stated that there is an important role for the leadership and the convener within a team to make sure effort is focused towards execution when needed. In the case of Tic-tag it happened that the team chose a specific market to focus on, but when it didn't work, they decided to reconsider this direction. Although they believed this was the right option, it did take a lot of time and Pieter (Tic-tag) stated that they reached a point where he believed that it was best to stay committed to their direction, instead of trying to find new ideas. Other participant added that creativity needs space, but it also needs structure and it is crucial to make sure actions are directed towards the goal of the endeavor. This is in line with the statements of Steve Jobs (Tidd & Bessant, 2009) who emphasized that turning ideas into successful innovations require commitment, planning, discipline and seasoned leadership.

4.4 The meaning principle

This section will examine the role of Meaning on within the relation between creativity and innovation. Based on the findings three recurring subjects of importance were found: 1. Aligning personal meaning and organizational vision 2. Finding meaning is a continuous process 3. Searching for Chemistry

4.4.1 Aligning personal meaning and organizational vision

During the interviews it was evident that meaning was strongly related to personal perception of work. The findings showed that people within the same organization often had different reasons why to be involved with the organization. There are of course similarities or shared perspective, but it shows that meaning is related to intrinsic motivation and thus it offers a unique case per for each separate individual. This was also acknowledged as a difficult challenge in leadership, since it is fundamentally 'impossible' to intrinsically motivate people from the outside. As described in the case of Circl:

"You won't get 33 thousand people intrinsically motivated; everybody is here with his or her own goal. He wants to build a career, she wants to make money, he wants to polish his ego, and she wants to be on the stands. Making impact is always nice, doing something good for someone else, the environment, for your children." - Merijn (Circl)

Meaning is in this sense related to personal orientation. It is a shaped through our own live experiences and it is continuous developing. This plays an important role in how we perceive and experience things. As described by Maurille (HKU):

"Yeah but it is also in your culture and the way you're raised. Anything that you experience in live, there is a story in everything."

The interviews showed that the process of establishing meaning didn't always happen consciously. Because this is process is unique for the individual, it also seemed difficult to pro-actively contribute to the cultivation of meaning from the organizational level. On the other hand, the participants acknowledged the importance of allowing individuals to engage in new experiences.

Besides the personal aspects of meaning, collective effort needs to be directed towards an outcome. This stresses the importance of a common goal to effectively direct innovative endeavor (Mcdonough, 2000; Tidd & Bessant, 2009) A common goal doesn't mean that everybody is working on it for the same reasons, but there must be a willingness an understanding of serving a collective benefit (Goncalo & Staw, 2005). Participants stated that what they perceived as the most effective way to cultivating meaning was to allow people find their own meaning in this common goal. While embracing differences, the leadership of the organization should also search for communalities that unite individuals to work towards a common goal. It was commonly stated that understanding is the first step to collective creativity.

" And I believe that one of the most important things that we do around here, is that we listen" – Merijn Circl

Since meaning is personal this common goal shouldn't be shaped in the isolated mind of the leader and be forced upon all others (Covey, 2014). It is important that all people within a team can find their own meaning within the values of the collective. This can only be done, by involving people in the creation of these values. As described in the case of Tic-Tag.

"The most important thing in teambuilding is that you create the values that you all stand for together. You shouldn't make a list and tell everyone this is how you should live. instead build it with the whole team. Wat do you think? what are our values? Where do you want to go? What is important to you? And what you see a lot is that a lot of companies write down what they want to be, while I always look at what they are. That's a lot easier". - Onno (Tic-Tag)

This example illustrates cultivation of meaning can only be effectively applied by means of understanding and growing together. This will enable the collective to unite different perspectives (Goncalo & Staw, 2005). And thus, allow creativity and innovation through the amalgamation of different views and perspectives within the organization because understanding showed to create a willingness to reconcile and to contribute to an overarching goal. For example, in the case of Circl, all members of their team were hosting and attending their own program. These programs were set up to engage external organizations and individuals, but also allowed the members of the team to

continuously gain new insights. These programs allowed them to attract external organizations in the field of sustainability and circular economy. The participants stated, that it was a regular occurrence that new relations and partnerships emerged from these programs.

4.4.2 Finding meaning is a continuous process

Each interview started with three basic questions: 1. Who are you? 2. What do you do? 3. What do you stand for. Especially the last question immediately gave insight into personal meaning and how this was translated to their work. This also asked for some introspection. The answers to this question showed that finding meaning is a continuous process which is never completely finished. Multiple participants elaborated on what they stand for and stated that over time they recognized patterns in the type of projects they would choose to work on or challenges they would face. In hindsight their decisions pointed out what they really valued. It showed that just like the innovation process, it is not a process that can be completely explicitly understood beforehand, but it is shaped during the process of personal development. As described by Kirsti (Mengfabriek):

"Looking back, I started to recognize that I've always been interested win the development of people, and I saw that humans all share the need to come together. to share knowledge and to be curious. And that new situations arise to which you can respond. So, if you talk about creativity and innovation, then I believe that my creativity resides in organizing programs. In which groups of people move from A to B. And that because of that value is create for the people, the organization, for areas, parts of the city and for platforms."

In order to get to a new destination, a new road has to be found. Self-reinvention doesn't necessarily mean that a person completely changes the way he or she sees everything or to completely change the way he or she acts. But it does mean that there needs to be a willingness to explore one's own capabilities, to try new things, to be open for new perspective and to apply one's own skills and expertise in new domains (Catmull & Wallace, 2014). And in this process people often do not only learn new skills or gain new knowledge it also explores one's own interest and values. This process will lead to new opportunities and challenges. As described by Rizky (TNO).

"And then I found out for myself, that I really like design, but I also kinda like finance you know, right now it triggers me more."

Especially within the smaller organizations it was shown that self-reinvention arises from autonomy and the ability to explore interests and capabilities. When looking at the several statements it is shown that most participants find meaning and inspiration in genuine real-life experience. As described by Egidio (Circl):

"I have lived in Aruba for 10 years. And over there everything is waste, it is like a big pile of trash. And then you start to ask yourself, what am I going to do and what is important to me. And that's basically how it started."

This exemplifies how personal feeling is eventually translated to work and how it plays an important role in the ignition of creative endeavor. Egidio stated that his search was shaped by following his own

curiosity and interest. Which allowed him to seek broader understanding of sustainability and allowed him to introduce new efforts of applying sustainable solutions which eventually led to the implementation of the Zero Waste Policy within Circl.

Eben (TNO) gives another example of how real-life experience inspired him to be creative and to always seek for opportunity:

"Because somebody who lives in Ghana who sells bread. I was there in the streets. And I could see from the car, you're at a traffic light and people will walk towards your car to sell you bread. A lot of people, at every traffic light. People sell a lot of bread over there you know. And you can be like I'll wait at my bakery. And stay waiting and stay waiting till somebody comes and buy your bread. But to me it's really creative, they just think like, nohh man, I won't wait in my little corner. By the time people get here, I'll be death. Let's move to the highway, that's where I have to be." Eben- The New Originals

In Both the case of Eben and Egidio, these experiences referred to events from their personal life outside of their working environment that allowed them to apply new perspective to what they were working on. Eben used this experience to nurture his own creativity and Egidio's experience triggered the question what he was able to contribute in his work, which eventually led him to develop the zero-waste program at Circl. This is an example of how experiences within one's own personal life can lead to more creative solutions within the working environment. It also shows that cultivation of meaning is possible through allowing people to feed their own interests and not by trying to provide a pre-made construct that works for everyone. The examples also show that when people are inspired, they will be more creative and thus come up with innovative solutions.

An interesting finding was that in most cases programming was used engage people within the organization, to engage external organizations and to leverage the importance of certain innovative direction. Firstly, setting up programs positively influenced the moral of members of teams, since it was often described as fun and thus meaningful. It also contributed to the learning curve of the members of an organization since these events often created the opportunity for knowledge sharing. Secondly, the programming opened up for engagement with external organizations. Inviting external partners often led to new opportunities and collaborations from which innovation was initiated. Thirdly, programming was used to leverage the interest in innovation. It was often effectively used to create awareness about opportunity and the importance of innovative endeavor.

4.4.3 Searching for chemistry

Chemistry was often addressed as a crucial element for creativity and innovative success. Even though no clear definition was given it can be related to stage setting elements given by Mcdonough (2000), Goals, Empowerment, Climate, Human Resources. Chemistry showed to revolve around the relation between members of the organization and the goal of the organization and the dynamics that occurred between members of the organization. Firstly, the goal is what ties the collective together, this creates

the sense of urgency and thus commitment (Amabile, 2014; Mcdonough, 2000). Being part of something showed significant importance among the participants. In addition, multiple participants stated that they were excited about their endeavors and experienced their work as exciting. It showed this also helped them put activities that were less enjoyable in the perspective of the bigger picture. This indicates that the experience that came with a job or task was gratifying in itself, and therefore the participants were more willing to engage in less enjoyable activities.

"I do really enjoy what I do, but I do believe that with every job whatever you do, there are always parts that suck. You just have to find something, that you're willing to do the bad parts for. But I must say that I'm very happy." - Maru The New Originals

Secondly, the participants often expressed appreciation for the people they worked with. It showed that the feeling of trust was established through finding understanding between perspectives.

For chemistry to occur within teams it showed to be important that they were assembled based on variety in skills and expertise among team members, yet there also has to be common interest and understanding towards each other. Both showed to be essential to get towards reconciliation. Differences created a variety of perspectives and common interest and understanding allowed the willingness to work towards an outcome. This played a very important role in the success in creative endeavors and the innovation process.

Thirdly, an important part that was often mentioned about meaning is that building the right relation is also meaningful in itself. And it was also proven to be a key predictor of creativity and innovation. Most participants addressed the importance of assembling the right people. In the selection and recruitment of people, personal feeling towards someone, conviction and positive energy were often mentioned as the most important factors. As described in the case of

TNO:

" What I really like in an organization or at least with TNO. You can decide who is hired for a certain function. But what I believe is also important is that you yourself search for a person that really fits. I don't necessarily look at what you can do, right now in the phase that we're in, but I do look at your drive, do you have the vision, and can I tell if you really want to do it." - Rizky (TNO)

In the case of The New Originals, the three founders had been friends for a long time, which allowed to really trust each other. But it was emphasized multiple times that it's not a natural thing and it shouldn't be taken for granted. Many of the participants expressed great appreciation for the fact that they were surrounded by the people they were working with. This again shows the importance of meaningful relationships. Some even added that if there is no chemistry or if you question the feelings it will probably not happen at all. As described by Onno (Tic-Tag):

"I've learned that if you question your feeling about someone, then often it will not settle. So, you probably shouldn't do it. It doesn't really matter with whom it is, but if you start rationalize and talk away your feelings, then you might see that people are able to do it, but they don't enjoy doing it."

If people feel that they're surrounded by people who they trust and feel related to, yet still bring a complementary perspective, then they are often more willing to get to reconciliation, even if it takes time and discussion. The participants stated that the willingness to get towards reconciliation was key in leading creative endeavor to innovative outcomes.

4.5 The progress principle

This section will examine the role of progress within the process of creativity and innovation and address the importance of progress. Based on the findings three recurring subjects were found: 1. Putting action and decisions into perspective 2. Making progress tangible 3. Reinforcing intrinsic motivation, progress loops and appreciation.

4.5.1 Putting actions and decisions into perspective

All participants supported the findings of Amabile and Kramer (2011) in which they proposed that in order for creative and innovative endeavor to succeed, it is of crucial importance to dissect processes into smaller steps. It was also stated that in order to effectively guide these processes, it is needed to recognize these steps and to build in moments of reflection and evaluation. the people involved should relate the actions being made and their outcomes, to the goals, ambitions of the organization. As described in the case of TNO:

"I often refer to performance clothing for creatives. Because imagine that we do something, and it completely doesn't relate to it. It is not necessarily a bad thing, but you should look into it, if you can combine those things. And when you encounter things that you really can't combine, it doesn't match it doesn't fit into our policy, then you just filter it out." - Eben (TNO)

Creativity and innovation can bring complex and dynamic structures, because it often involved multiple people who brought in different expertise and affected multiple organization that had different interests. At Circl it was also stated that to effectively act in this dynamic sphere it is very important to take time to reflect the steps being made, by relating to the company's values and the set-out goals:

"What we did at the start of Circl is determine a strategy to determine what direction we were heading, and to think about our ambitions. We did that in the beginning, even when the organization is constantly in development, especially in these times. But because we set up these objectives in the beginning, we were able to know what direction we would go with Circl and what Circl is. A platform to connect people to gather knowledge and to share knowledge. To accelerate the transition towards a circular economy. And because we know that, that was our core, we also know how and who to get involved. And how to bring it to the outside world." -Egidio (Circl)

Recognizing the different phases within the process is also important for effective decision making. Because the different parts of the process ask for a different focus. Where generation of ideas for innovation of Circl asked the people involved to explore and seek opportunities, they eventually reached a point, where the building was finished, and most innovations were implemented. This asked for a completely different mindset. Therefore, it is important to identify these phases and to determine what actions and decisions are best to make within a specific phase.

Especially within the creative process it can be difficult to justify actions which are relevant and promise to lead to significant progress, but which lack a direct result or clear, visible importance. A commonly mentioned example was the importance of incubation. Incubation in this sense refers to the process of thinking about a problem subconsciously while being involved in other activities. Several participants stated that creativity is definitely not an exclusively conscious act. It needs elaboration between the conscious and subconscious. Therefore, it is of great importance to plan incubation into the process, and explicit reflection on the process can help the people involved to recognize when time for incubation is needed. As described by Nirav (HKU):

"The subconscious has apparently been active after all. To me it's important, that within the creative process you don't know what is happening precisely. If I'm not focusing on it, But I do know how to plan it. I can recognize that right now the incubation-phase is important, it says that we need to let things rest for now. And that's something I can tell. I can bring it into the structure, and tell a company, put down the work for now and continue tomorrow. You know what, try to work on a different product for now. That often works within these processes. That you're working on multiple projects, that works pretty well."

The dynamics within the process can be highly facilitating of creative effort. As Nirav stated, it can be strongly beneficial for people to work on multiple projects. Pieter (Tic-tag) added that it does bring the challenge to effectively focus effort, and therefore it is important to put these actions and decisions into perspective.

4.5.2 Making progress tangible

Most participants referred to the process of innovation as a process of trial and error by design. This makes it difficult to determine whether or not actual progress is made. It was also commonly recognized that to understand that failure is a necessary part of the road towards progress, is a fundamental insight that allows progression. As described in the case of Circl:

"Your last failure is your new point of departure and based on that you should decide what route to take next. And by not giving up, dare to ask questions, dare to challenge the market and dare to challenge the environment" - Merijn (Circl)

Even failure can be seen as progress if it provides the necessary information to continue. Innovation is a process in itself. There is no real pre-set destination. Innovation often asks for setting new bars. This asks the innovative organization to create a construct which determines how progress is actually being

made. How the organization set up this construct differed between cases. Circl and Tic-tag both set up their own KPI's to quantify and track their progress, where for TNO it came more down to setting up session of collective reflection between founders. In the case of Circl this was done by developing tools to measure the results of different aspects of the overall aim to make impact. As described by Malu (Circl):

" For example, now we're setting the KPI's for impact. Which we actually want to create. So maybe when we organize a program, will people actually think more sustainable?"-

Making progress tangible, also enables progress loops, which are described by Amabile and Kramer (2011) as one of the primary facilitators of progress. The concept of how progress loops are established and positively contribute to progress within the innovation process might be best described in the concept of design thinking, which states the importance of iteration. Nirav (HKU) explains why progress loops are crucial in enhancing progress:

"The second thing is also related to it, and this one is very much underestimated, but I am going to mention it. And that is 1 focus on the process and 2 focus on variation. And by that, I mean you should train yourself to not only assess things that are created just based on that they're created. You can't assess in an absolute way. But you can assess it in comparison to for example an earlier version or a different version. This is like design thinking for dummies, but there is a whole lot within the iterative process. So, you make something, then you test something and then you did something else and that's change. And then you go on and try to see if this version, does it show more meaning, or value, is it more thriving and is it more innovative? But not, is it innovative? In absolute form. So, you shouldn't try to assess it in an absolute form, you should assess and discuss things based on variation. And that is the progress loop. Because then you can say, this is progress, as compared to what we had yesterday or last week or last month or the beginning of the process. And then you will feel the progress."

As Nirav describes, it is impossible to assess progress when looking at absolutes. This is the power of the iteration. Instead of reflecting on progress a whole, progress loops allow the organization to reflect on the versions within the process. It divides the process into smaller steps that allow for reflection between those steps. This creates the actual feeling of progress, because it allows the people involved to actually experience improvement step by step. It also allows the organization to show this progress to the outside world. For example, in the case of Tic-Tag, there is always some pressure from investors, who would like to see the progress being made. Progress loops allow the organization to let external partners and even customers to see the progress and even engage in the process of development. This is important, because the lack of visible progress, can lead to outside pressures which are often not beneficial for both creativity and innovation. As described in the case of Tic-Tag:

"Well, we ran more tests. Even if it is small. We learned from it. And every time we wrote down the actual problem of the customer and how we could solve that particular problem. And by doing that, the phases in the process become clearer. And it becomes clearer what the product should actually be able to do." - Onno (Tic-Tag)

Involving external partners and customers in the innovation process also helped to effectively match the development of the innovation with customer demand. Where the development of the innovative product in itself is uncertain, it is also uncertain how the market actually responds to this innovation (Ries, 2011). Progress loops can be used to relate the progress being made to the actual demand. In this way the overall risks in commercializing the innovation are mitigated.

4.5.3 Reinforcing intrinsic motivation through progress loops and appreciation

It was commonly acknowledged that a fixation on the outcome of innovative endeavor inhibits creative progress, yet it was also acknowledged that success is often needed as well to encourage the people involved in the process. The findings show that instead of just focusing on the overall outcome of the process it is effective to split up the process into smaller steps, which allows the celebration of small wins. The celebration of small wins, in return facilitates a psychological state of mind which is highly contributive to leading creative endeavor to innovative success (Amabile & Kramer, 2011).

Participants added that even though actual results can be encouraging, it might also be needed to explicitly express appreciation. If progress is made without the acknowledgement of effort, then it can have strong negative effects on the further course of developing an innovation. In the case of Circl, where a corporate parent company is involved, there was a certain need for this public appreciation. As described by Merijn (Circl):

"Well it is also in how you deliver the message, like the tone of the music. Sometimes it helps to say it in public for an audience. Sometimes it is by mailing the managing director and ask him to come by to tell everybody how proud he is. It's really in the, it's just like other people in other companies. It is a basic human need, that we share."

The progress principle is not just about the progress, it is also about the feeling of progress. If this feeling of progress is translated to the people who are involved, then it is likely to contribute to their willingness to engage in new and challenging effort. In addition, multiple participants stated that appreciation is also needed to balance out negativity, to overcome setbacks and to deal with tough periods. Innovation is all about taking risks, and those risks are not always rewarded (Catmull & Wallace, 2014). As illustrated by Merijn (Circl):

" failure is a part of progress, but it can still ask a lot from the people working on it"

It can also be hard to deal with outside comments and negative critique. The feeling of progress can be used to overcome these situations. As described in the case of Tic-Tag:

"I think that, that's really how we grew as a team the last year. Before.. we sometimes got discouraged. You're full of enthusiasm of the idea but when people tell you that it's not that good, then you will feel it for a minute. But we should just express these feelings to each-other and be like this is justified and we have to fix it. And this person just didn't understand it and that's also okay. And express it a little more often. That is also the progress loop, being happy about the small steps and being proud of the lessons you have learned." - Onno (Tic-Tag)

"But sometimes you have to do it, even if it's just to understand, aye this is a cool product. Everybody is excited about it; everybody understands its functions and possible applications. Just to realize we're doing good and it's nice." -Pieter (Tic-Tag)

These examples again show that progress loops have an important function, towards the internal organization, but also in the interaction with the external world.

4.6 The Ambidexterity principle

This section will examine the role of Ambidexterity within the process of creativity and innovation and address the importance of balancing exploration and exploitation. Based on the findings three recurring subjects were found: 1. Understanding the importance of exploration and exploitation 2. Balancing Interests 3. Defining and redefining value.

4.6.1 Understanding the importance of exploration and exploitation

None of the participants denied the importance of exploration and exploitation. The answers given by participants on balancing exploration and exploitation, all indicated that both are equally important, and that it is key to find ways to balance the two instead of clearly placing on above the other. It was recognized by everyone that every organization has its commercial needs. On the other hand, the participants all acknowledged that there will be no creative process, if the whole process revolves around meeting these commercial needs. Exploitation and exploration were often seen as two ends of a spectrum and most organizations separated the different interest into different people. For the startups this mostly led to appointing the financial and exploitative interests to a single person. Even though the lines between specific tasks and positions showed to be more dynamic within the startups, both The New Originals and Tic-Tag made a clear distribution of interests. When Maru (TNO) was asked about who safeguarded the financial interests of the organization it was very clear how it was divided:

"Not me and Eben, Rizky does. I am not really focused on numbers. But I am a realist. But sometimes also an opportunist, but not as big of an opportunist as Eben. I am more a realist. Not in the way that I know the exact outcome but. I try to shape my ideas into something realistic."- Maru (TNO)

This also shows that is not just about a balance between commercial needs and creative effort, but also between being opportunistic and being realistic. Both ends need to be protected to get a successful outcome. At the startup level this mostly came down to making decisions on the specific allocation of resources. Which was stated to be less complex because the resources were relatively limited compared to the bigger firms. Most effective decision making came from considering the options and eventually coming up with a solution that worked for both interests. For example, in the case of TNO:

"It is just like, when you see that black shirts are doing good, you have to say as a designer okay cool. It is going well, but I prefer pink. But you can see that pink is not really selling that good. You can say as a designer well I still prefer pink, but the sales still say black. Then you have to find balance, what you do is for example you take a t-shirt of one style and you make it in black and in pink. And I'll say 100 black 50 pink." -Rizky (TNO)

The interesting thing about TNO, is that Rizky was responsible for both design and finance within the organization. What was also interesting about this, is that he stated that both fields seem to creatively challenge him.

At Circl there were also two extremes to the organizational spectrum and these interests were also divided among different people. This even shaped different groups within the organization. Merijn (Circl) expressed that he had the responsibility to bring the two sides together. Circl didn't exclusively have a commercial mission, but it was still part of Abn Amro. Because Circl functioned as an independent organization they didn't have to take into account all the commercial needs of the bank, yet they still needed to justify their strategic and financial decisions. In order to keep their course aligned with the bank it was important to keep close contact with their parent company. As stated by Egidio (Circl)

"Yeah we try to stay closely connected to the bank. In the beginning we were really seen as a separate company. But in fact, it is an initiative of Abn Amro. So, we try, to constantly seek this connection with our parent company and with the needed business lines. And if we decide to implement something, we make sure it is aligned with them, so we can still get the support."

This also allowed them to effectively align new plans with the overall mission of the bank. As the head of exploitation of Circl, Merijn, was responsible for assembling the right team for Circl. In order to stay in line with the interests of Abn Amro, he hired Bart (ABN), which came from Abn Amro. He was wearing as Merijn stated 'a blue hat'. Referring to the bank and people who were on the commercial side of the spectrum. On the other hand, Malu (Circl) was wearing a 'green hat', as one of the initiators of Circl and current purpose manager, she was a driver of the development of new opportunities for sustainability. There positions resembled the two ends of the organizational spectrum, where the blue hat refers to the traditional perspective ABN, primarily focused on managing exploitation, the green hat refers to the progressive focus on making impact in the field of sustainability. When asked about how these different sides interacted and what was needed to reach a point of reconciliation Malu (Circl) answered:

"When we started with the new plan of Circl, a whole new design. It already had cost a lot of money. But it was innovative and circular. We didn't complete know how it would turn out, but what we did know is that it would make a great and nice impact, in terms of sustainability but also for the bank. We needed 3 things. A well substantiated excel sheet, because that is important, I mean the sky is not the limit. As in you're dealing with money and there is no endless budget. Secondly you need an elaborated plan, that tells exactly what kind of materials will be used. But the third thing and it's funny because our managing director said, yes, when I looked into your eyes during the presentation, y'all presented the plan and I just couldn't say no, because there was so much drive and passion and enthusiasm, people that really believe in something and that was decisive. So, you need al 3 components a good plan it has to be financially attractive but also that drive, all three are important but I believe well that drive actually makes it happen."

This shows the importance to understand the argumentation of the other side. Only then it is possible to reach the point of reconciliation. Understanding the argumentation of the other end of the spectrum was commonly acknowledged as highly important to produce innovative outcomes.

4.6.2 Balancing interests

Sometimes the people representing the two ends of the spectrum can't come to an agreement. Therefore, multiple participants emphasized on the importance of establishing mechanisms that overruled the separate perspectives. For the startups it worked that both Tic-Tag and The New originals were assembled of three main decision makers. This helped them to balance out the arguments. They did mention that it is sometimes important to consciously place the existence and continuation of the organization above all other arguments:

"But sometimes we can turn the switch to just for a moment not be friends, just to talk about what is needed for TNO to survive and continue. It is about turning that switch. Besides the fact that we are good friends". - Rizky (TNO)

As most participants agreed that explorative and exploitative interests should be balanced, it also means that the personal influence should definitely not be neglected.

"On the other hand, it might be the biggest challenge, but it is also the greatest strength. Because you can oppose it towards another person's perspective. So just hear out his ego for a second, turn it off and get to a conclusion. The biggest challenge might be the greatest gift." - Eben (TNO)

The other organizations also acknowledged the importance of personal perspective, which is also necessary to keep it balanced. Serving the best interest of the organization is not just about removing the personal perspective. At Tic-tag both Pieter and Onno confirmed this by pointing out that if you remove the personal or internal perspective you end up becoming too reactive to impulses that come from the environment.

When multiple organizations are involved in a project, balance between interests can be established by setting goals that exceed the interests of the different organizations involved. For example, in the case of Kirsti, who is the lead developer of the Creativity World Form program in 2019, it was her mission to connect both the creative sector and the business sector.

"And based on that, those two worlds are linked together. You have a creative sector of people who all think in a creative way, and you have the economic importance. How do you get those two together? To get them to work on SDG's sustainable development goals, to establish innovations which are beneficial to the whole world."- Kirsti (Mengfabriek)

These sectors serve different interest, yet by letting them work towards overarching Sustainable development goals, both interests need to reconcile in order to establish innovation which are beneficial to the whole world.

4.6.3 Defining and Redefining value

The results indicate that finding balance is not only an act of evaluating all options and choosing the best option, it also showed to be about how value is defined and that sometimes value needs to be redefined to come to innovative measures. The case of Circl provides a nice example, because it was initiated by Abn Amro. A Dutch bank, which is traditionally, commercially oriented. Yet Circl was sparked by the longing to create a different type of value. The mission of Circl was manifested around creating impact in the field of sustainability. This bridges the gap between the commercial needs of a traditional bank and the societal position and influence of a corporation. This mission to create impact, asked the bank and the people involved to determine a broader sense of value than just financial gains. As described by Malu (Circl):

"But it is important that you also start testing. And what I find really interesting about that is that you can test on the current criteria of impact, for example money, how much does it cost and how much do you earn from it? But you are also creating sustainable impact, so you start studying, what is exactly the definition of impact. So, what does it mean for the environment, but all these things are all new, because years ago we learned to link it all to money. So, we have to make this translation to money"

It was acknowledged by multiple participants that testing the current definition of value opens up for new possibilities for innovation. When looking closer into current definitions of value, sometimes it showed that value is based on specific interest of organizations, not necessarily to serve all actors involved. Michael illustrates that within construction it commonly happens that decision are being made based on producing volume instead of coming up with the best solution for a problem. By closely looking at how current systems are set up and what interests they serve, people can become able to reconfigure structures that barricade effective and innovative solutions and thus evolve the status quo. As described by Michael (Mengfabriek):

"But the trias energetica, which is decisive based on legislation , it always stems from the construction lobby. Because we need to put as much material as possible into our facade for isolation. But is that true? So, if I want to preserve the ambiance of a monument then I would not want to add so much material. And besides that, adding a lot of material is also creating a lot of waste. Maybe we are over-dimensioning this environmental installation approach, and maybe we can prevent it. Well that's something that tests legislation. Well that's what I try to do together with the provinces and municipalities. Let's get to innovative calculation methods, which are not about adding material but smarter use of the building."

This example also points out that innovation is often not a one-dimensional transition. It doesn't only lead to renewing a certain product or part of the process, often innovation eventually will lead to changing structures and systems. Therefore, it is important to relate short term value like direct financial gain, to long—term values and opportunities. The examples showed that if organizations are able to effectively translate future potential into value, it can open up for more creative endeavor and new opportunity for innovation.

5. Conclusion / Discussion

This last chapter concludes the findings of this research, providing answers to the formulated research questions. Afterwards the findings of the research are discussed in relation to previous literature. Finally, the theoretical contributions, managerial implications, limitations of this research and suggestions for future research are covered.

5.1 Conclusion

Previous literature has placed creativity at the heart of innovation (Amabile & Pratt, 2016; Drazin et al., 1999; Hagardon & Bechky, 2006; Catmull & Wallace, 2014). The aim of this research was to gain holistic understanding of how creativity influences innovation and to examine the role of organizing principles within the relation between creativity and innovation. Firstly, this research attempted to examine the different cases to determine how creativity and innovation mechanisms interact on different levels within organization . This was done by creating a holistic view of how creativity occurs, how creativity is applied and how innovative performance is related to creativity within organizations. Secondly, this research examined the role of three organizing principles as moderators of the relation between creativity and innovation. For this research the meaning principle, the progress principle and the ambidexterity principle were examined. (Amabile & Kramer, 2011; O'reilly & Tushman,2013)

For this research five different, on creativity and innovation focused, Dutch organizations were studied. Data was collected through analysis of secondary data sources and through conducting semi-structured interviews. The approach of these interviews was highly inductive, which allowed the researcher and participants to engage in in-depth conversations, addressing the unique aspects of the creative and innovation processes within the organizations. Afterwards, based on the method of template analysis, the data was coded and grouped into overarching themes, which shaped the overall analysis of the research and eventually to answering the research questions.

The main question of this research was how creativity influences innovation and what role organizing principles play within this relation. As expected, this research showed that there is no single dimensional answer to this question. Yet even though the cases differed in how they approached innovation, the results showed that there is a fundamental role for creative endeavor in creating new and original products, in re-vitalizing processes and facilitating social innovation. In addition, all participants acknowledged the importance of the selected organizing principles, in their decision-making and for guiding creative endeavor to successful innovative outcomes.

The first sub-question of this research revolved around the relation between creativity and innovation. It was commonly recognized that creativity started at the individual level. The results showed that intrinsic motivation, creative discipline and the willingness to engage in challenging work, were important factors that allowed them to get through challenging and uncertain parts of the creative

process. Despite the importance of individual creativity, the creative performance of the organization doesn't exclusively rely on the creativity of separate individuals (Catmull & Wallace, 2014; Hagardon & Bechky, 2006; Uwadia, 1999). The results indicated that collective creativity is largely based on the interaction between individuals within the organization but is also influenced by the nature of these interactions and by the leadership within the organization. For creativity to flourish, a variety of perspectives, skills and expertise are essential. It was commonly recognized that the amalgamation of different perspectives and sometimes even opposite perspectives lead to the most inventive and innovative outcomes. It was also noticeable that all organizations were positioned within a dynamic environment that facilitated the in and out flow of different perspectives.

This research identified four fundamental steps in all creative processes: information, identification, relevance and application. The creative process was iterative by nature and thus elaboration and adaption in all steps seemed to be necessary. Creativity was needed in the conceptualization of new ideas, yet it was also mentioned as important in the execution of these concepts. This refers not only to the actual execution of the innovation, but also to prototyping and finding new and more effective ways to execute the innovation.

Instead of inventing and implementing completely new efforts, or trying to build a new product from scratch, innovation was often defined as combining old components in new ways. The findings support the theory of Hagardon (2003) which proposes that innovation largely revolves around the ability to untangle ideas from their current context and putting them together in new ways.

Collaboration with external organizations and individuals showed to be very common in the initiation and execution of innovation. These collaborations allowed the organization to leverage outside expertise, and the amalgamation of creative forces seemed to lead to the most innovative outcomes. These collaborations often emerged out of the creative environments of the organizations. The collaborative approach within the cases shows that innovation is becoming more and more dynamic. Instead of building innovation from the inside in the company, all cases emphasized the importance of inclusiveness. The in and out flow of perspectives enabled continuous creative input which strongly contributed to the innovative capabilities of the firms. On the other hand, it also brings the challenge to effectively determine the course of the organization. Participants emphasized that the vision and objectives of the organization should be clear and should be the foundation for decision making. Otherwise the organization can become overly reactive to the environment. The dynamic view of innovation also confirms the importance of guiding future actions and decisions based on organizing principles.

The second sub-question of this research revolved around the influence of the meaning principle on the relation between creativity and innovation. The results show that individuals had their own reasons to work on their projects, and thus found fulfilment in different aspects of their work. Meaning on the

organizational level revolved around the overall goal and vision of the organization. Cultivation of meaning was therefore most effectively established, by focusing on the alignment between personal meaning and the vision of the organization. The feeling of contributing to something while developing oneself on the personal level, was commonly acknowledged as highly decisive for stimulating creativity and leading it to innovative outcomes. The results also showed that positive feelings towards other members strongly contributed to the willingness to get towards reconciliation. Most innovative outcomes seemed to be produced when opposite perspectives came together. In addition, it was stated that personal attention and team building was positively associated with the creative and innovative capabilities of the organization.

The third sub-question of this research revolved around the influence of the progress principle on the relation between creativity and innovation. This principle was selected based on the work of Amabile and Kramer (2011). The progress principle refers to the discovery that work progress is a major determinant of psychological states that facilitate creative behavior. The results show that structural moments of reflection are needed to put actions and decisions into perspective, by pro-actively relating progress to the vision and objectives of the organization. This starts by vividly setting out the goals of the organization. Multiple participants explained that because creative endeavor is explorative by nature it was sometimes difficult to determine the actual made progress. Therefore, it showed to be essential to make progress tangible. In order to make progress tangible, first the process of innovation should be separated into smaller steps. It was mentioned that progress was often too difficult to be examined in absolute terms. Instead progress should be assessed based on variety. This was best illustrated by referring to the iterative approach of design thinking (Plattner et al., 2009). The iterative approach allows for assessing progress based on variety between versions of for example a product. Besides creating tangible measures for progress, progress loops also showed to reinforce intrinsic motivation. Amabile (2014), proposed that the celebration of small wins strongly impact the outcome of innovative endeavor. Progress loops allowed members within the organizations to express their appreciation towards their co-workers based on actual results. It also allowed the members of the organization to deal with failure. Failure was commonly identified as an essential part of the innovation process, yet participants added that it could lead to a decrease in moral. Multiple participants stated that appreciation could be effectively used to balance the negative impact of failure.

The fourth and last sub-question of this research revolved around the influence of the ambidexterity principle on the relation between creativity and innovation. This principle is about establishing a balance between exploration and exploitation (O'reilly & Tushman, 2013). All participants addressed the importance of finding balance between explorative and exploitative effort within the firm and acknowledged the importance of both. In order to effectively establish a balance between exploration and exploitation it showed to be essential to acknowledge that innovative organizations should be aware of both the need for discovery of new opportunities and to serve the direct commercial needs of

the organization. This acknowledgement was often put to practice by dividing explorative and exploitative interests and distributing these interests among members of the organization.

Evidence was found in all cases that the use of data on financial performance, feedback from customers and external organization, could effectively be used to make more objective decisions. Innovative endeavor was often referred to as an activity that served a future demand instead of the current demand. It showed that balancing exploration and exploitation at least partly revolved around the balance between short- term goals versus long term goals. If the organizations were able to effectively determine the value of long-term endeavor, then it created more room for exploration. Besides that, it also showed to be important to accurately define and redefine value. When the organizations were able to redefine value, it opened up new and more opportunities to be creative and thus lead to more innovative outcomes.

5.2 Discussion

This section will relate findings of this research to previous literature. Afterwards, the theoretical and managerial implications will be discussed. Finally, the limitation of this research and suggestions for future research are given.

The construct of analysis within this research was build up from individual creativity to organizational innovative capabilities. Three aspects of individual creativity have been highlighted based on previous research: meaning motivation and inspiration. Amabile and Kramer (2011) proposed that meaningful, work doesn't have to have profound importance to society. What matters is whether a person perceives the work as contributing to something or someone who matters (even, the individual self or family). The findings of this research showed that the perception of meaningful work, differed between cases. For the individuals working on circular innovation, there was often a stronger sense of urgency, where in other cases enjoyment of work played a large role in the meaningfulness in work. These findings are in line with previous literature on work orientation, which proposed that people who view work as an end in itself are often more creative in their work. (Amabile, 2014; wrzesniewski et al., 2017).

Amabile & Pratt (2016) presented that individuals are too some extent both intrinsically motivated and extrinsically motivated to work. Within this research it was commonly acknowledged that intrinsic motivation was presumably the most important indicator of creative flourishment, yet for the execution of innovation, extrinsic motivators seemed relevant as well. In addition, as expected based on previous work (Amabile & Pratt, 2016; Pratt et al., 2013; Mcdonough, 2000), contextual influences like the climate within the organization and relations between individuals seemed to be of significance importance as well for the motivation of individuals within the organization.

Thrash & Elliot (2003) proposed that inspiration is, first, unintentionally evoked by external or internal stimuli, Afterward, a sense of transcendence occurs, making the individual aware of more than his or

her usual concerns, Finally, this awareness encourages the individual to actualize the evoked idea, transforming into motivation (Dongwy & Youn, 2018). Within this research it was rather difficult to explicitly determine how inspiration occurred, yet it was found being open to different perspectives and searching for genuine experience based on personal interest were highly relevant activities that lead to inspired actions.

Even though individual creativity was acknowledged as essential for the generation of new ideas, most participants agreed that creativity is not a solitary endeavor" (Catmull & Wallace, 2014). Hagardon & Bechky's (2006) conceptualization of "collective creativity "argued that, although some new insights arise in organizations that are truly the product of a single individual's mind, others arise from a momentary collaborative process among multiple individuals that is qualitatively different. The findings of this research indicated that the most creative and innovative ideas emerged from the amalgamation of different and sometimes even opposite perspectives. This also addresses the importance of the role of leadership within the organization in facilitating complementary effort among individuals in the organization. These findings can be related to the statements of Ed Catmull, on the importance of protecting Candor and the work of Goncalo & Staw (2006) who address the importance of collectivism and on the other hand protecting individual perspective. Finding balance between personal perspective and organizational vision, showed to be crucial in creating commitment and preserving creative capabilities of the organization.

Meaning in work, has shown to be one of the strongest indicators of creative flourishment (Amabile, 1993; 2014; 2016). The paradox with meaning in work and intrinsic motivation is that they can hardly be influenced by outside factors. Thus, it brought the challenge of cultivating meaning from the organizational level. The findings showed the importance of aligning personal meaning and motivation with the organizational vision and objectives. The results of this research add that personal attention and involving individuals in the construction of values and objectives of the organization strongly contributed to the cultivation of meaning. In comparison to previous literature on meaningfulness in work (Amabile, 2013; wrzesniewski et al., 2017) it was rather difficult to accurately determine what meaning individuals explicitly found in their work. The findings did show that meaning was not static and often not consciously formed, instead meaning was constructed over time, in the process of personal development. Aligning the development of innovation with personal development showed to be essential for the cultivation of meaning within the organizations.

The second principle revolved around progress and the sense of progress within the process of creativity and innovation. By correctly managing the stimulating effects of progress, organizations allow themselves to be more enduring and constant in their creative development, and thus over time better able to develop innovative capabilities (Amabile, 2014). This research relates the findings of Amabile to the iterative process of design thinking (Plattner et al., 2009). Where Amabile (2014) primarily discusses the cognitive, and behavioral aspects of progress, it is also necessary to relate it to

the tangible progress being made. Amabile and Kramer (2011)stated, that celebrating small wins, significantly contributes to the success of innovative endeavor. The findings showed that applying iterative cycles, based on the process models of design thinking(Plattner et al., 2009) and lean (Ries, 2011) allows organization to actually celebrate small wins, by relating progress to variety and improvements of versions instead of assessing innovation success based on absolutes.

The last examined principle revolved around the concept of Ambidexterity. Ambidexterity is about managing the contrasting forces that are commonly identified as exploration and exploitation (Guildford, 1967; O'reilly & Tushman, 2013). This pleads for balance in efforts of divergent and convergent thinking. It stresses both the importance of dealing with limits, as the importance of creative openness. This research supported the notion that both exploration and exploitation are needed for innovation. In this research, ambidexterity was mostly related to innovation, and thus the findings were focused on managing divergent thinking and convergent thinking within the process of innovation. The findings showed that different interests are often divided among different people and that amalgamation of the perspective of these people allow the most creative solutions and innovative outcomes.

5.3 Theoretical contribution

There are several contributions to management literature. This research explores the different angles to how creativity is built up and how it influences the innovation process, based on qualitative in-depth analysis of cases.

Even though previous literature addresses the importance of understanding the creative process Amabile, 1988; Guilford, 1967; Catmull & Wallace, 2014), only a limited amount of research has been conducted to understand these processes. During the interviews it was often mentioned that there are similarities between these processes, yet every process is unique. This has led to the finding that the form of innovation applied matters for how creativity influences innovation. Where the development of single extensive product innovation for example, seemed to primarily use creativity for idea generation, the cases that focused on multiple innovation, applied more creativity throughout the whole innovation process.

Additionally, this research extends the literature on creative processes by looking into the similarities and differences between different creative processes. This research has led to the development of a comprehensive model (Appendix F) that shows how creativity occurs within these unique processes and similarly how innovation as a process can be conceptualized. Even though creativity and innovation were seen as mutual exclusive concepts, this research did find that the creative process can be placed within the innovation process and thus is a fundamental element of innovative endeavor. Additionally, this research relates literature based on innovation teams (Mcdonough, 2000; Johnson, 2017), to the development of collective creativity. The findings add that even though different steps of

the innovation process, could be executed by different people, it is strongly beneficial to nurture holistic understanding of the vision behind innovative endeavor among individuals active within the innovation process.

Another contribution to scientific literature on creativity and innovation, is that this work applied an integral approach of three organizing principles. Previous research has provided several angles on the relation between creativity and innovation. Amabile (1988; 1993; Amabile & Kramer, 2011; 2014; Amabile & Pratt, 2016) has provided an extensive body of scholarly work, addressing especially the psychological and relational aspects of the relation between creativity and innovation. On the other hand, there have been several scholars that have researched the tension between the commercial needs of the organization and how this relates to their explorative efforts and their ability to engage in new opportunities (O'reilly & Tushman, 2013; Anderson et al. 2014; Koen et al., 2002; Georgiev & Georgiev, 2018). This research builds largely on the foundation provided by Amabile, but also addresses the commercial needs of organizations, by examining the role of meaning, progress and ambidexterity.

In addition to scientific literature, this research was based on insights found in contemporary writings by Ed Catmull (Catmull & Wallace, 2014), Stephen Covey (2004), Ray Dalio (2017) and more. Especially the work of the three before mentioned authors led to the search for the role and significance of organizing principles. Besides these writings this research was highly inspired upon studying creative work from Nike, Adidas, Pixar, Massimo Osti, Steve Jobs, Elon Musk, Kanye West and many others. It is believed that this curiosity added an extra dimension to this research that is not necessarily visible in the collected data but can be recognized within parts of the interaction with participants, based on common interest and shared admiration for creative and innovative performance.

5.4 Managerial implications

This research firmly states the importance of creativity for innovation. And the results show that instead of focusing on the output, it is essential to focus on sustaining creative input. Building from this foundation the leadership of the organization should set out vivid goals, strive for progress and find ways to effectively evaluate this process. Evaluation of financial results, data, feedback from customers are all great ways to test the vision and ideas of people within the firm. All three are essential for the development of innovative capabilities of the firm. But it is important that the direction of innovative endeavor is determined based on the vision of the organization and the potential of the collective. For creative and innovative endeavor should not just follow data, results and feedback.

In order to create a vision and set common goals that align with intrinsic motivation of individuals, the findings suggest that individuals should be involved in constructing the goals and vision of the

organization. This does not mean that all decision making has to completely be democratized, but all individuals must at one point get to an agreement on the decisions within the creative process. Engagement in the goals and vision of the organization creates the feeling that individuals contribute to something and thus create a sense of fulfillment. In this way organization can affectively contribute to the intrinsic motivation of individuals and thus spark their creativity.

Recognizing potential is needed to empower people to grow towards potential (McDonough, 2000). Consequently, this research shows that the most innovative outcomes are produced through the reconciliation of different perspectives. This needs several elements to happen. Firstly, the organization must facilitate the environment and experiences that allow a variety of experiences. Secondly, it must build a culture that facilitates a climate of trust in which people are willing to engage in discussion about ideas, while working towards reconciliation. Therefore, managers should, build on strengths and use differences to create variety and always seek for complementary effort.

This research and previous literature show that progress is one of the main facilitators of the psychological state that allows organizations to guide creative endeavor to innovative success. In order to effectively guide progress, it is important to split up the creative and innovation process into smaller steps. Splitting up the processes into smaller steps allow the organization to evaluate progress based on variety between these steps, and thus allows the individuals to actually celebrate small wins. In addition, it was found that there was a crucial role for appreciation within teams. Even though opinions about how to express appreciation differed, all participants acknowledged that feeling appreciated was a basic human need. And thus, it showed to be a major facilitator of creative behavior.

Lastly, this research showed that the implementation and commercialization of innovations are most effectively executed by applying iterative cycles to test the success of commercialization and implementation of innovation. In this process, it best to involve stakeholders and consumers. For creative and innovative endeavor to succeed it is important to steer based on external evaluations and feedback, yet to protect the creative potential of the organization it crucial to follow the vision of organization instead of just responding to external input.

5.5 Limitation and directions for future research

The aim of this research was to provide an extensive analysis on the relation between creativity and innovation while examining the role of organizing principle. Besides contributions this research has faced several limitations. Firstly, because of the abstract and dynamic nature of creativity and innovation, it was difficult to pinpoint the variables and its dimensions in a way that they created effective ground for analysis between cases. Secondly, there was a large variety between cases on how they applied creativity, the nature of innovation and the industries that they were active in. A more focused selection of cases based on common industries, common practices or common type of innovations, would allow more accurate analysis and thus deliver more specific and concise findings.

To some extent it was a deliberate decision to apply a wide scope for the selection of cases. Yet as this researched emphasized the importance of the uniqueness of the interactions and processes for every separate organization, it would be beneficial to apply a more focused long-term case study. For future research it would be interesting to examine the relation between creativity and innovation for a longer time-period in which development within the organization is documented step by step. While looking at a small selection different organization that are operating in the same domain. This would not only lead to more unique and concise findings, but it would also offer a more effective format for engaged scholarship. The results of this research are largely based on self-assessment of participants and secondary data, collected by the researcher. Collecting data while being present during the operational practices of the organization would significantly enrich the understanding of the interactions within the firm and would make it possible to critically analyze the data provided through self-assessment.

Another limitation of this research was that it was conducted by one researcher. During the interviews it would have been beneficial if a second researcher would assist the interviewer in interpretation of statements, making notes and guiding the interview in the right direction. The approach of this research was inductive and thus lead to conversations that focused on the structure of the research but also allowed the participants to talk openly and freely. Maintaining the right balance between openness and structure was a challenge and could have been executed more effectively with the assistance of a second researcher.

This research emphasized on the importance of meaning, progress and ambidexterity. Because of the broad scope of this research, the results are limited to providing a conceptual analysis of these findings. To develop rich understanding it would be interesting to further investigate how these principles are actually put to practice, for example researching how organizations align personal meaning with organizational vision, research on how validating learning can be monitored over time and how the explicit management of ambidexterity is operationalized would all be interesting subjects to examine separately.

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APPENDIX A: Topic List

Topic List

Who are you? Wat do you do. What do you stand for?

Creativity

Example questions
How would you define creativity and how is it relevant for your organization?
What does your organization do to stimulate creativity?
Can you describe the creative process within your organization?

Innovation

Example questions:
How would you define creativity and how is it relevant for your organization?
Can you give an example of an innovation that you have been working on?
Can you describe the innovation process within your organization?
Do you believe that creativity is necessary for innovation and why ?

Meaning Principle

Example questions:
What meaning do you find in your work?
Is it important to find meaning in work?
How does meaning relate to creativity and innovation?

Progress Principle

Example questions
Do you apply structured ways of determining progress?
How do you make sure that progress is made?
How does progress relate to creativity and innovation?

Ambidexterity Principle

Example questions
How do you balance exploration and exploitation? (refer to commercial needs and artistic, or creative needs/ focus on current demand / future demand)
What measures are taken to preserve this balance?

APPENDIX B: Fuzzy front end (Koen et al., 2002)

New concept : Fuzzy Front End of Company

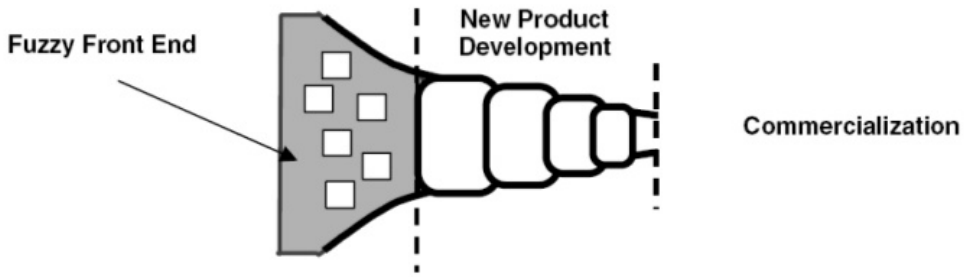


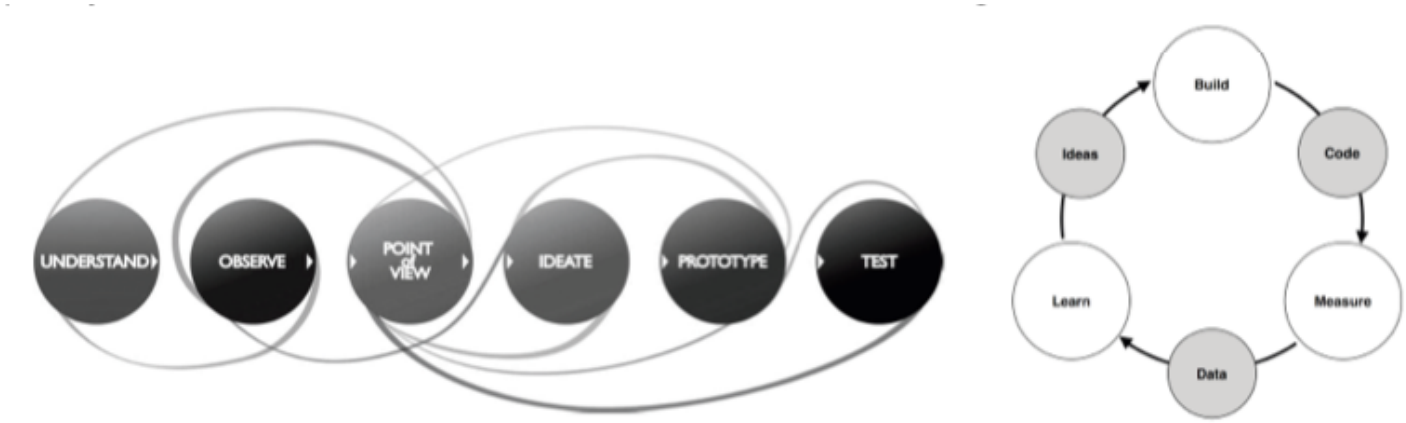
FIGURE 1-1. The entire innovation process may be divided into three parts: fuzzy front end (FFE), new product development (NPD), and commercialization.
The division between the FFE and the NPD is often less than sharp, since technology development activities may need to be pursued at the intersection.

Source: Fuzzy Front End: Effective Methods, Tools, and Techniques. Peter A.Koen, Greg M.Ajamian, Scott Boyce,Allen Clamen, Eden Fisher, Stavros Fountoulakis, Albert Johnson, Pushpinder Puri, and Rebecca Seibert

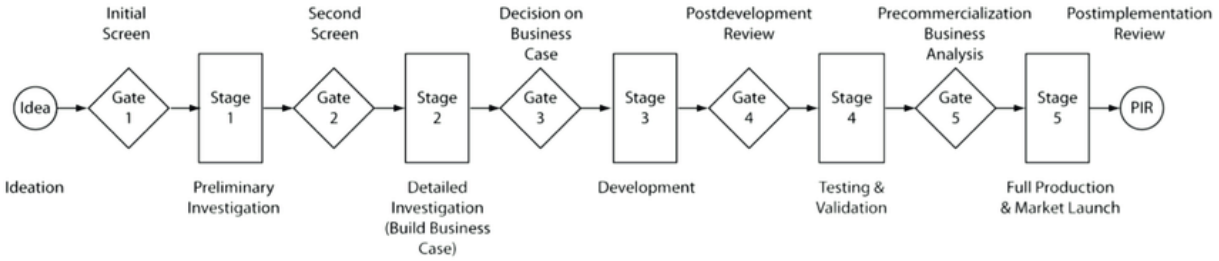
TABLE 1-1.
Difference Between the Fuzzy Front End (FFE) and the New Product Development (NPD) Process

	Fuzzy Front End (FFE)	New Product Development (NPD)
Nature of Work	Experimental, often chaotic. "Eureka" moments. Can schedule work—but not invention.	Disciplined and goal-oriented with a project plan.
Commercialization Date	Unpredictable or uncertain.	High degree of certainty.
Funding	Variable—in the beginning phases many projects may be "bootlegged," while others will need funding to proceed.	Budgeted.
Revenue Expectations	Often uncertain, with a great deal of speculation.	Predictable, with increasing certainty, analysis, and documentation as the product release date gets closer.
Activity	Individuals and team conducting research to minimize risk and optimize potential.	Multifunction product and/or process development team.
Measures of Progress	Strengthened concepts.	Milestone achievement.

APPENDIX C: Design thinking process model (Plattner et al., 2009) & Lean validating learning method (Ries, 2011)

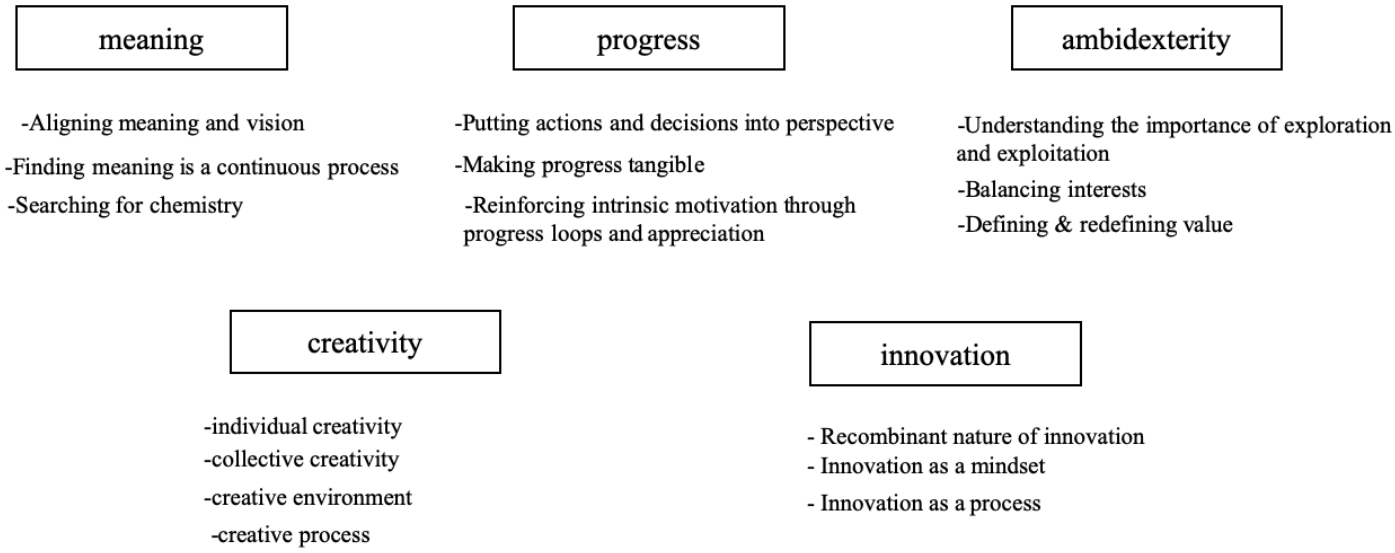


APPENDIX D: Stage gate model (Cooper, 1990)

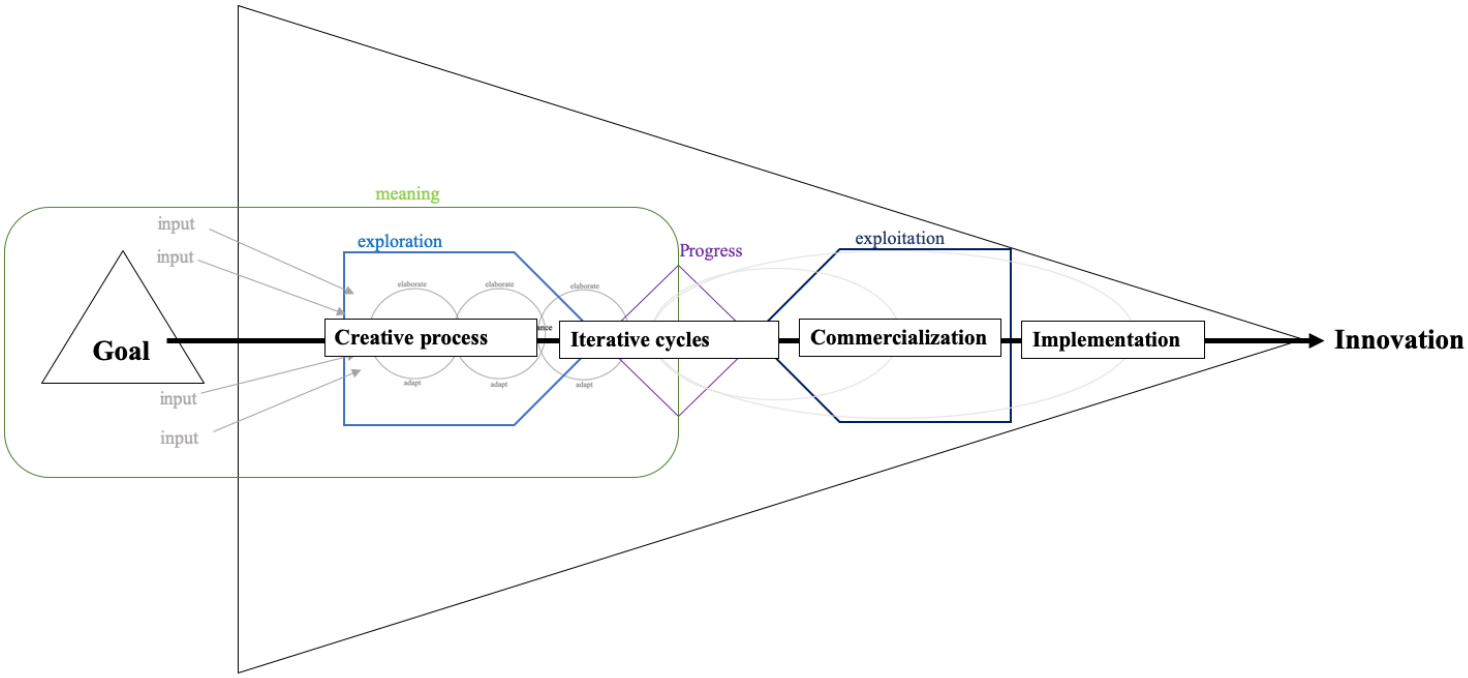


APPENDIX E: Main themes template analysis

Overarching themes: template analysis



Appendix F: Comprehensive Innovation Process Model



Appendix G: Description of cases (secondary data)

The New Originals. “Creating performance gear for creatives”, their mission embodies their dual approach to innovation. On one hand the organization aims to make innovative product, focused on creating new designs. New designs are developed based on experimentation with aesthetic and functionality. On the other hand, TNO aims to inspire and activate people to be more creative. In executing this mission, they actively collaborate with external partners. Previous partners are other brands that were involved in design collaborations like Nike, Patta and more. But TNO has also worked together with organization in other fields like the Stedelijk Museum Amsterdam to work on social activation campaigns. In this way TNO was able to leverage the youth, allowing them to be more engaged in social development. These campaigns in return create leverage for TNO as a brand. Recently TNO has been involved in several international collaborations. They partnered up with a Cuban non-profit skating organization called Goodtimes to do a social campaign to create opportunities for the skating youth in south America. Along with these campaigns, TNO releases merchandise, printed with their mantra ”creatives are the new athletes” in a foreign language. For the collaboration with Goodtimes they released the t-shirt with “Creativos son los nuevos athletas”.

Besides direct collaborations, TNO has also become involved in the Amsterdam City Collective. In which they join forces with the municipality of Amsterdam and a selection of other innovative and creative organizations from Amsterdam. Together with the Amsterdam City Collective they participate in global trade missions, to put the creative culture of Amsterdam on the global map. All three participants addressed that innovation is created organically. Building on authenticity, by following their interest while looking how to inspire and activate youth cultures. They are constantly searching for opportunities within their environment.

Retrieved from:

https://www.theneworiginals.eu/blogs/news

https://www.theneworiginals.eu/pages/about-us

https://www.youtube.com/watch?v=9fteS2FoLRM

Circl. As a platform for circular innovation, Circl aims to connect all sorts of individuals and organization active in the field of sustainability and circular innovation. The building of Circl is a flagship center, that showcases multiple circular innovations. These innovation range from circular solutions in construction, to reducing food waste and social innovation. Some of the innovation implemented include

- The use of as much rest-material as possible in the construction of the building. From material in isolation to the integration of old windows, frames, lockers etc.
- Using grey water to flush the toilets and to water the plants surrounding the Circl building. The Circl center has its own autonomous system of capturing and storing rainwater.
- When elaborating with Mitsubishi about how to use elevators more sustainable, they came to a solution in which Circl wouldn't own the elevators. Instead Mitsubishi kept ownership of these elevators and Circl would pay them a fee for the exact monthly use of the elevators. All employees of Circl were then stimulated to take the stairs as much as possible. This solution leads to energy and cost reduction.

Besides the innovations mentioned above, Circl also aims to create ground for social innovation. The Circl center is located directly next to the headquarters of Abn Amro. It is their mission to bridge the gap between the corporate world, entrepreneurs, students, non-profit organizations and other organizations active in field of sustainability. The participants mentioned that they attached great value to this inclusiveness, because it allowed diversity and new perspective, which has

been proven to lead to new innovative solutions for the Circl building in the past.

Retrieved from:

https://circl.nl/themakingof

https://www.youtube.com/watch?v=l2gy1Jbq_2c

https://www.youtube.com/watch?v=BtD4xJUBvWQ

The Mengfabriek.

A center of collective entrepreneurial development in the field of circular innovation and social innovation. The founders aspire to create an environment in which synergetic performance is stimulated and to effectively promote circular and sustainable development.

The initiators of the Mengfabriek consciously composed the linkages between organizations within the Mengfabriek to engage in synergetic innovative development. Synergetic innovative development refers to complementary efforts between entrepreneurs that enhance the overall development of innovations.

In creating the Mengfabriek, it was the mission to build a creative work environment by refurbishing the old feed mill without adding new material. This asks for a lot of creativity in the use of material available but also to meet criteria, like for example isolation. Within the Mengfabriek, all parts of the network are selected based on their vision towards the circular economy. Without complete awareness of all actors they are also connected and grouped based on their complementary skills and expertise.

Retrieved from:

https://www.mengfabriek.nl/#kern

https://www.youtube.com/watch?v=zRlU1G-a330

https://www.youtube.com/watch?v=vKigsyUzGDE

HKU: university of applied arts Utrecht. At the HKU there is strong focus on innovating the process around stimulating creativity and innovative capabilities among individuals and organizations. Both participants stated that they were not necessarily focusing on innovative products. Instead they focused on how to improve processes to come up with new solutions and innovative products. Both participants were personally writing on specific aspects of creative processes to stimulate innovation. This allowed them to gain better understanding of the creativity and innovation processes from specific angles, and to apply this knowledge to guide students through the innovation process. Maurille focused on how individuals can break their own mental barriers to become more creative and guiding individuals to relate creative effort to economic value. Nirav was more focused on interactions within teams and the distribution of roles within the organization. In this way both participants contributed from their own perspective to development of innovation process. Based on their own research they try to continuously develop new practices in shaping creative processes to stimulate innovation.

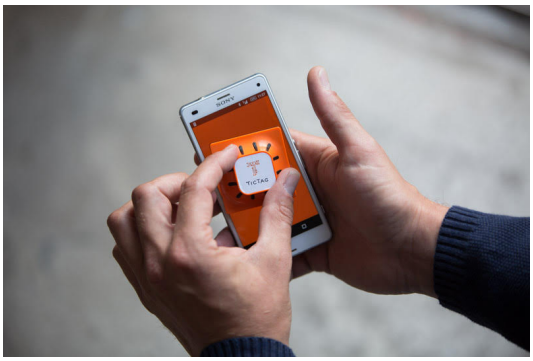
Retrieved from:

https://www.hku.nl/Opleidingen/KunstEnEconomie.htm

https://www.youtube.com/watch?v=G6xacVFZfoY

https://ag-eindhoven.nl/ddw-lezing-innovatie-academisch-genootschap

Tic-tag. It is their mission to develop technology that allows businesses to connect with consumers through their mobile phones. Instead of using existing hardware to create mobile phone interactions, Tic-tag decided to develop their own unique Smart tags. Tic-tag aims to create a universally compatible mobile interaction component. Some examples for use cases of the smart tags are:



- Retail: implementing smart tags in stores or products to create unique product experiences
- Industry: implementing smart tags to enhance logistic control features. Using smart tags for accessibility features (e.g. scan to enter a building). The smart tags replace company cards and keycards. By use of the smart tags anyone that is authorized to access to for example a building can easily enter the building by pressing a mobile phone to the smart tag.

For the development of the hardware components of Tic-Tag's technology, they've have partnered with Karlsruhe institute of technology to further develop their smart tags.

Even though mobile phone interactions is already being developed and applied, it will still incrementally innovate markets. For example, in retail this technology opens up to a new spectrum of functions that can be applied (e.g. authentication of products, unique product content, location-based content etc.). Since this technology is relatively new, it also asks Tic-tag to look into the specific use cases and how their clients and the end consumers will use this technology. Therefore Tic-Tag has partnered up with Countr. Countr is an organization that works with retailers to implement new technology to make shopping easier. Countr functions as an intermediary between tic-tag and retailers. This collaboration allows Tic-tag to work more effectively towards adoption of their technology.

Retrieved from:

https://tic-tag.com

https://www.emerce.nl/interviews/tictag-verbindt-online-offline-stempel

Final Note

To be completely honest, writing this report and my journey through academia so far has been quite the struggle. For the most part I felt misunderstood and not in place. This is partly due to the fact that I kind of have a hard time dealing with conformity and following pre-set standards. But I believe that this system is flawed in the sense that it fails to value the uniqueness of individuals. By doing so we cater a system that favors those who silently follow over those who care and speak up. Therefore, I honestly believe that there should be more space for personal exploration and more emphasis on the values and aspirations of individuals. This world is overflowing with information and it is more important than ever that people should invest time in what they believe is important. If a college degree is like a ticket into the academic and professional world, what use does it have if it doesn't lead to the right destination?

To some extent the subject of my thesis emerged out of the lack of creativity and inspiration within the academic environment and therefore this work emphasizes the need for creativity in both expression and seeking solutions for real problems. With that being said, I am really grateful for this experience and the inspiring conversations with the participants of this research. What all these individuals had in common was that they all emphasized the importance of accepting people but were never willing to accept norms and standards. I am greatly inspired by anyone who wants to make a change and follows their own beliefs to make a positive contribution to this world that we share.

I would like to thank all the participants of this research who opened up and genuinely shared their beliefs and experience. I have learned a lot more than what is covered in this report and I gratefully take all these lessons with me.

I would like to express my appreciation for the supervisors and lecturers of this master, for they showed me different values and expectations than I previously experienced within the academic environment. The year was opened with the statement: "Don't just be here to get good grades, instead use this time, this environment and each other to make the most of it". It showed that the team behind this master shared the believe that to some extent it is more important to engage on your own personal journey and set your own standards, then to just follow the standardized norms given by any institution.

I would like to express my great appreciation for my supervisor for giving me the space and opportunity to follow my own feeling and intuition, where possible. Even though this did not speed up the process it did provide me with more valuable lessons than I would have learned by just following the procedures. I would like to thank him for his patience, guiding me through my vagueness and for really taking time to give constructive feedback.

I would like to thank my family for their support and especially my uncle for providing me personal advice and his home for me to focus and finish my thesis.

I would like to thank my girlfriend and best friend, for having patience with me and providing me the clarity, support and love I needed to continue on this journey.

And lastly, I would like to dedicate this work and all my academic ‘accomplishments’ to my grandparents, who garmented me with the right values in life and always believed in me. And to my mother, who showed me unconditional love and support through all times in my life.

Greatness is achieved only through the love of God