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Creativity & Space

The Power of Ba in Coworking Spaces

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| Abstract

This thesis examines how the space – defined as the shared mental, virtual but especially physical (workplace design) environment – influences one's own perceived levels of creativity. The environments under observation are coworking spaces, a new type of post modern organization of work for communities of freelancers and entrepreneurs. Based on the Japanese philosophy of space & place – ba – introduced by Nonaka as a shared space for knowledge creation (=creativity) and emerging relations, a survey based quantitative study was conducted with users of coworking spaces participating in ten countries. The findings show that a physical ba (the workplace) full of stimulants can truly stimulate creativity and that, through the intermediate step of new valuable contacts found in the space, also flexibility of the spatial setting fosters creativity. The findings further show that the mental ba, the shared values of welcoming new ideas, a culture of open knowledge exchange, and a buzzing atmosphere reflecting the values of coworking spaces have even more power and need to be understood also as a prerequisite that makes creativity possible.

| Zusammenfassung

Diese Thesis untersucht, wie Raum – definiert als eine geteilte mentale, virtuelle, vor allem aber physische (=Arbeitsplatzdesign) Arbeitsumgebung – die kreative Selbstwahrnehmung beeinflussen kann. Die untersuchte Arbeitsumgebung sind Coworking Spaces, eine neue postmoderne Form der Organisation von Arbeit für Gemeinschaften von Selbstständigen und Gründern. Basierend auf der japanischen Philosophie des Ortes – Ba – definiert von Nonaka als geteilter Raum für die Erschaffung von Wissen (=Kreativität) und neu entstehenden Kontakten, wurde eine quantitative Umfrage bei Coworking Nutzern durchgeführt mit Teilnehmern aus zehn Ländern. Die Ergebnisse zeigen, dass physisches Ba (der Arbeitsplatz) gefüllt mit Reizen wirklich Kreativität stimulieren kann und das, über den Zwischenschritt neu im Coworking Space geknüpfter Kontakte, auch die Flexibilität der räumlichen Struktur Kreativität unterstützt. Die Ergebnisse zeigen weiterhin, dass mentales Ba, geteilte Werte wie Offenheit gegenüber neuen Ideen, eine Kultur des offenen Wissensaustauschs und eine energiegeladene Atmosphäre welche die Werte von Coworking Spaces widerspiegelt, eine noch größere Kraft hat. Es muss deshalb als eine Voraussetzung für Kreativität verstanden werden.

| Keywords

Creativity, Ba, Coworking, Workplace Design, Creative Environments, Creative Class, Future of Work.

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| List of Abbreviations

Hyp. = Hypothesis
sqm = square meter(s)
ref. = reference value

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1 | Introduction

Creativity is the new Holy Grail of the professional world at least since the rise of the creative class, postulated by Richard Florida in 2002. Siemons found already in 1997 (p. 43) that the majority of job-advertisements for office-jobs explicitly ask for creativity. The term is everywhere and the central question from a management and management science perspective is how to foster creativity (Robinson 2009; Martins/Terblanche 2003; Florida 2002; Nonaka/Konno 1998; Siemons 1997; Amabile 1997/1996; Csikszentmihalyi 1996).
The ability to be creative is identified as the key driver behind all human progress (Robinson 2009; Martins/Terblanche 2003; Csikszentmihalyi 1996; Harlan et al. 1976). Florida (2002, p. 223f) speaks of "creative capital" as a special form of human capital.

Unlike other forms of capital the problem with creativity is that it is hard to grasp – which also shows in the fact that it is still not perfectly defined. Creativity is fragile and it cannot be bought in the classical sense (Henn et al. 2005, p. 197). Nobody can be ordered to be creative. Also it is very hard to measure and to quantify (Amabile 1996; Csikszentmihalyi 1996). Creativity can only be supported, fostered and enabled by providing the "right" conditions, environments and fertilizers. To find what is "right" in the world of work is one core concern of creativity research. For several decades scientists like Teresa Amabile tried to identify and describe these "right" conditions from every possible angle: personal & personality factors (e.g. Amabile 1988; Puccio et al. 2000), schooling & education (e.g. Robinson 2009), organizational environment in terms of teams, leadership, tasks, atmosphere (e.g. Amabile 1996), rewards (e.g. Pink 2010) or in terms of geography (e.g. Florida 2002; Törnqvist 2011) to name just a few. Also interactions of all these factors have been intensely researched culminating in models like "person environment fit" (Puccio et al. 2000) or "KEYS" (Amabile 1997). Both models claim to explain the fit of person (read: employee) and environment (read: organizational conditions).[1]

But all this research on creativity fostering environments almost completely ignores one variable: Space & Place (Chan et al. 2007, p. 6; Kristensen 2004; p. 89, Mitchell McCoy/Evans 2002, p. 409). The influence of the physical surroundings of work – the workplace design – on individual or team creativity is considered in only a few studies (Shalley et al. 2004, p. 941). Therefor this thesis is devoted to the research question how space can influence creativity within people. It claims that the physical place of work has direct and indirect power on creative behavior. To test this claim and to shed light on this scarcely researched topic a quantitative study was conducted.

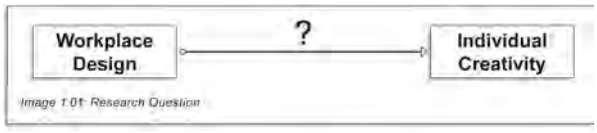

Image 1.01: Research Question

On an (urban) macro level for example Florida (2002; 2008) builds a strong case for the relationship between place and creativity by pointing out that creative people tend to flock together and that the socio-cultural milieu of a city is crucial for creative professionals. This is true and important but it does not explain how a good place for creative work actually looks on a micro level. Most often space is seen as a simple container for work and not as its facilitator by managers (Levin 2005, p. 305). But space is also seen as a future key variable for economic success (Bell 2010) and workplace design as having some influencing power like (a) guiding interaction and information flow (Allard/Barber 2003, p. 218; Allen 2007; Davis 1984), (b) informing people of (corporate) cultural values as a representing artifact (Hatch 1993; Gagliardi 1990, Berg/Kreiner 1990), (c) supporting the ability to work concentrated and efficiently (Shalley et al. 2004), (d) being a supporter for health and safety, and finally (e) stimulating creativity and innovation (Martens 2011; Carrera et al. 2009; Kristensen 2004; Mitchell McCoy/Evans 2002). Especially for the last point the literature is mostly non-empirical (e.g. Bell 2010, Duffy 1997) or use a qualitative design (e.g. Martens 2011). Quantitative evidence of the influence of workplace design on people's creativity is almost missing both in (A) creativity and (B) workplace design research. As creativity becomes more and more important, the relationship of space and creativity should be examined.[2]

By looking into the existing literature on how creativity can be fostered, one factor instantly shows up as being most important: the social and (corporate) cultural environment. The social architecture of a given setting is assumed to be more important than the physical architecture (Groat/Stern 2000, p. 41) and workplace design cannot work on its own but as a powerful intensifier (Duffy cited in Stumpf et al. 2011)[3] if the culture of a company and its workplace design match. The "right" mindset of the people and the "right" organizational support for creativity, all factors that have been researched much better then space influence, have to be "in place" to assure that the place itself and its design can maximize the (positive) effect on creativity (Martens 2011, p.

[1] The detailed discussion of this field of research follows in section 2.2 and 2.3.

[2] The detailed discussion on this field of research follows in section 2.4.

[3] The study Stumpf et al. 2011 is a seminar paper written by two fellow students and me. This paper used interviews and reported the responses, among others also an interview with Frank Duffy.

70f). Therefore the model picture of the research question needs an expansion. The workplace design should be understood as a moderating variable of the strength of the influence social environmental factors have on creativity.

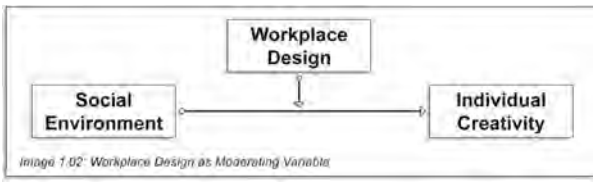

Image 1.02: Workplace Design as Moderating Variable

To conduct research on the influence of space on creativity, the research design needs to follow a model that defines space, its dimensions and the facets which are assumed to influence creativity. Nonaka & Konno (1998) present the framework of "ba" for their work on knowledge creation, which they define as a creative process. Ba is Japanese and roughly translates into space or place (Nonaka/Konno 1998, p. 40)[4]. Nonaka & Konno adapt the Japanese philosophy of place for management purposes and define ba as a shared mental and/or physical and/or virtual space that supports creativity (Nonaka/Konno 1998, p. 40f). This concept of ba will be used as the basic framework in this thesis because it integrates the workplace and its design (physical ba) and the social environment (mental ba) together in one model, so image 1.02 could be written in ba-terms as well. It includes also the virtual dimension of space that is growing more important today but that will not be in the center of this thesis.[5]

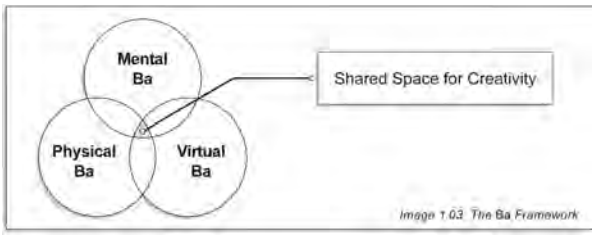

Image 1.03: The Ba Framework

Furthermore a research object (= a space) is needed to conduct the study in. Because the range of creativity influencing variables is extremely broad a situation which by its very nature controls for some of these variables is ideal so that the influence of space can be measured as unbiased as possible. Also the people working in such an organization should do creative work so that the setting controls for task characteristics. These requirements are met by coworking spaces:

Coworking spaces are work environments shared by a community of freelancers and entrepreneurs. It is a rather new phenomenon. The term only exists since 2005 (Spinuzzi 2012, p. 402) and it caught the interest of researchers just recently. Only a few studies exist (e.g. Spinuzzi 2012; Carrera et al. 2009). It fits to the ba framework because it is a physical place (shared physical ba) with a likeminded community (shared mental ba) and the spaces often also have online platforms for communication and networking (shared virtual ba). Members can come and go and spent as much time in the space as they want. Also they only use coworking at all if they like it.[6] Coworking spaces are no normal organization foremost because there is no hierarchy and no boss. Basically everyone is self-employed and hence his or her own boss. Coworking is seen as an organizational answer to the changing world of work and cannot be understood without understanding these changes in work that are also the base for the new creativity paradigm.

The structure of the thesis is as follows: the next section (1.1) presents the overall changes in the world of work towards more creativity which is the foundation coworking emerged on. The phenomenon coworking itself is discussed in detail in section 1.2. The theory section is completely build around the ba framework. Chapter 2 describes the ba theory and its philosophical roots. Chapter 2.2 discusses creativity as the aim of ba and how it can be fostered. The next three chapters present the literature review on the topics of corporate culture and climate that build a mental ba (2.3), on workplace design theory that leads to the physical ba (2.4), and briefly on online platforms that are a virtual ba (2.5) – always in regard to creativity and coworking spaces. On the basis of the theoretical body section 3 derives testable hypotheses and section 4 describes the method to test them. The results of the conducted study are presented in chapter 5 and discussed in chapter 6. Finally a brief conclusion is given (7).

1.1 | The Changing World of Work

The key change in the realm of white-collar office work can be summarized as the shift from Taylorism to post-Taylorism (Laing 1993; Klug et al. 1998). In the office of Frederick Taylor, the founder of scientific management, everything was organized in a way that routine work is cut into small steps and executed by specialized clerks following set procedures and rules (Vester 2009, p. 25; Kraut 1987, p. 60). This was accompanied by a strong hierarchy and a spatial representation of this hierarchy. For example to get a larger office was seen as a reward (see Levin 2005, p. 304). Over the years and due to technology as well as organizational devel-

[4] Ba can really only be roughly translated into space/place. It has much more meanings in the Japanese original including field, context, topos and locus. They all share a strong real or transcended spatial connotation.

[5] The detailed discussion on the concept of ba follows is section 2.1.

[6] This fact will later be crucial as it explains the skewed data collected in the survey.

opment this setting changed. Most of the clerical work can be automated today and the content of the white-collar work changes with it. The technological change can hardly be overrated. Just until very recently, without mobile phones and without the internet, it was self-evident that employees had to be in the office at fixed times. They had to be there to be reachable by phone, fax or mail and they had to be there to access (archived) files and use office machines and desktop computers. Nothing of this is necessary anymore. People can be reached everywhere and they have data access everywhere. Mobile phones, laptops and e-mail addresses have replaced their immobile ancestors (see Ross 2006, p. 144f). The only thing that is still possible only in the office is planned or spontaneous personal face to face interaction among employees. Because of the ongoing automatization of routine tasks, non-routine tasks – tasks that can be considered to involve some creativity – come into focus. The change described can be summarized as "Entwickeln statt Abwickeln" (Bene 2009, p. 24) with the English meaning: being innovative instead of carrying out routine work (see Williams 2007, p. 18). Creativity becomes crucial for success (Cummings/Oldham 1997, p. 22; Spath/Kern 2003, p. 116). In his work Florida (2002) classifies already 40% of the US-workforce as members of a creative class. One quarter of this class he calls the super creative core (Florida 2002, p. 75) and it is most likely that the number has risen during the last decade.

To put creativity more in the center of work makes another shift in the concept of work necessary. Time is not an adequate measurement to estimate the value of work anymore. An idea may come in a second or in a week and working longer on a problem does not secure a better solution (see Friebe/Lobo 2006, p. 56). This also means that it is impossible to order someone to be creative.

Such highly skilled creative knowledge work is far more collaborative (Chan 2007) but collaborative work needs different forms of organizational corporate culture support. Collaboration needs to be enabled and encouraged. As a result, work is getting more flexible and less tight to existing, predefined structures. This applies also to space.

> "With work itself changing, the organizational structures within which it is done changing, the character of the workforce changing, and the tools used to do work changing, the physical spaces in which work occurs must change as well." (Chan et al. 2007, p. 6)

The design of offices, on a structural level, follows a small set of distinct typologies and their combination. The types of typologies can be tied to different types of organizations (hierarchy/network) and their cultures and understanding of work (routine/non-routine). Frank Duffy (1997), developed a 2x2 matrix model: 'Hive/Cell/Den/Club' (Duffy 1997, p. 61) to classify the typologies and their corresponding types of work. The two axes are need for interaction (low/high) among employees and task autonomy (low/high) (see image 1.04). In a low/low work environment, people do clerical routine tasks that do not need much interaction and it is best served by a 'Hive' typology: simple standardized workstations in an open plan setting, designed to support the forever same tasks (Duffy 1997, p. 62). In a low/high work environment people have more autonomy in terms of what and how. They also work on their own and need to concentrate. A good example would be universities. The fitting typology is 'Cell': cellular enclosed offices (Duffy 1997, p. 63). In a high/low work environment the tasks are mainly routine and given but they need a lot of interaction and teamwork. The fitting typology is a 'Den': an open plan or group office structure with assigned desks but also with meeting rooms or special spaces needed for the daily work (Duffy 1997, p. 64). Finally, in a high/high work environment, people have autonomy and need intense collaboration to do their job which is (creative) knowledge work. The fitting typology is the 'Club' where a variety of flexible workspaces is provided and individuals or teams can freely chose which setting they want to work in for a given task at a given day. The name is derived from 19th century British clubs where people came together to do what is now called networking. So a 'Club' typology is a social space that supports informal encounters (Davis 2011, p. 207). The ongoing socializing here is supporting exchange and creation of tacit knowledge, as Handzic & Chaimungkalanont (2004, p. 62) found. For concentrated individual work people would not go there but in a club-office also small closed rooms are provided on an "as-needed" basis (Duffy 1997, p. 65). In general Duffy (1997, p. 61) and Laing (2006, p. 243) describe and predict that office work is moving from Hive over Den to Club or from Cell to Club settings. This reflects the changing world of work where routine tasks get automated and creativity becomes more and more important. The change in the used office typologies follows the other change.

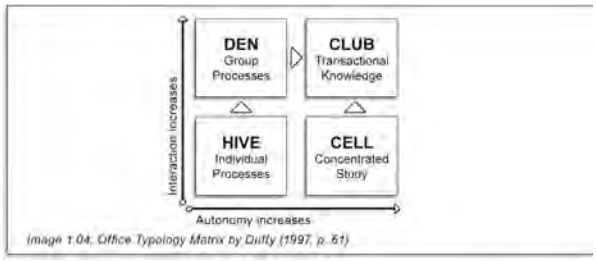

Image 1.04: Office Typology Matrix by Duffy (1997, p. 61)

Work becomes more dependent on the knowledge and creativity that is tied to people. On this basis, an independent workforce of highly skilled freelancers who sell their knowhow as a service is growing. They are not part of one company/organization anymore but work project-based for whoever needs their skills. They are independent and think in networks, not in hierarchies. The extreme form of such

new workers are popularly called the "Digital Bohemians" by Holm Friebe & Sascha Lobo (2006). This group of people which is part of Florida's "Creative Class" has a non-standard definition of work. They can work everywhere because they depend on nothing but a laptop and internet connection (Friebe/Lobo 2008, p. 145). They see a permanent employment more as a threat than as a promise and they prefer to be paid for a chunk of work instead of a chunk of time because the quality of creative output is independent from the time invested (Friebe/Lobo 2006, p. 56). They are the people who invented coworking and coworking spaces.

1.2 | Coworking

After the descriptions in the last section the foundation on which coworking as a phenomenon emerged is clear. Coworking itself needs to be described and understood in detail for this study because a deep understanding of the research object is needed in order to develop a suitable theoretical framework of understanding how these spaces influence creativity and how an actual research methodology can be designed.
So again: what is coworking and how does it relate to the discussed changes in the work paradigm? The founders of betahaus in Berlin put it this way:

> "Since the digital network economy was evoked in academic literature for at least two decades, coworking as a phenomenon finally shows for the first time how this ongoing digitalization of work may affect our actual physical work environments."[7](Welter/Olma 2011, p. 29) "Coworking is simply the natural organization design of the urban collective manufactory."[8](Welter/Olma 2011, p. 38f)

The technology changes suggest that there is no need to be in an office or another defined place to do work anymore. Mobile devices and network access allow people to work everywhere. And that is what made coworking spaces possible in the first place (see Jones et al. 2009, p. 133). But exactly because people can choose where to work they carefully choose a place they like (Friebe/Lobo 2006, p. 157). Apparently for some people coworking spaces are exactly these places. The interesting question is: why?

Most of the existing literature on coworking is written by practitioners who founded spaces like Jones et al. (2009), Welter & Olma (2011), and Kwiatkowsky (2011a/b). Naturally these texts do not have on objective scientific view on the topic but they provide valuable insight into the coworking movement.[9] The interesting point is that coworking seems to be not only about the physical place. Coworking is seen as a "state of mind" (Kwiatkowsky 2011b, p.6) and a "social movement" (Neil Goldberg, cited in: Jones et al. 2009, p. 25) and not only as a new business model to rent workspaces. Coworking brings likeminded people together who share a certain understanding of what work is for them and how they would like to work.

> "Coworking is the answer for freelancers and other location-independent professionals who are tired of the isolation of their home offices and the distraction of their local coffee shops. Coworking acknowledges the physical, emotional, and spiritual needs of the independent workforce by providing a community where socialization and collaboration are readily available." (Kwiatkowsky 2011b, p.7)

Of course the coworking space as a physical place is equally important. It is simply the place where the community manifests itself, meets and of course works. But without the community-feeling the space would not work hence it is a prerequisite. All of this is summed up in the slogan "working alone together" that is used as a kind of heraldic motto by coworking spaces all over the world (Spinuzzi 2012; Jones et al. 2009). A group of people working in the same space are not necessarily coworking but another group without a fixed space can still be a vivid coworking community (see Jones at al. 2009, p. 44). Because coworking is so community based it is hard to really define it (Deskmag 2012a, p. 3). Each coworking space has its own working definition of the term and they can be quite different.
What can be said is what coworking is not. Coworking spaces are not incubators which have been known for a long time (McAdam/Marlow 2007; Hansen et al. 2000). Incubators are resource based (McAdam/Marlow 2007, p. 364) "hot houses" (Hansen et al. 2000, p. 74) that offer a place to work and adjunct services like telephone service, coaching, IT-infrastructure (e.g. printers) and support, or accounting and tax support to start-ups to nurture and ease their development. They are run by investors (who invest into the start-ups), universities or public economic promotion institu-

[7] The original quote in German is: "Nachdem die digitale Netzwerkökonomie seit mindestens zwei Jahrzehnten in der akademischen Literatur beschworen wurde, zeigt sich am Phänomen Coworking zum ersten Mal, wie die fortschreitende Digitalisierung der Arbeit sich auf unsere konkrete, physische Arbeitswelt auswirken kann." Translated by the author.

[8] The original quote in German is: "Coworking ist schlicht und ergreifend die natürliche Organisationsform der urbanen Gemeinschaftsfabrik." Translated by the author.

[9] From a linguistic point of view it is interesting that the coworking community uses the word as a noun, a verb and an adjective (Jones et al. 2009, p. 8). As such it has to be spelled without a capital C because it is a normal word and not a name. Furthermore the spelling coworking is preferred to co-working because coworking describes something very different from the traditional co-working of two or more people within a traditional organization (Foertsch 2011).

tions. Start-ups can only for a limited time only. Because start-ups in one incubator might be competitors exchange of ideas scarcely happens. Incubators are no communities.
Coworking spaces are also no serviced offices like Regus[10] and others offer them. They rent regular office space to mostly corporate clients on a very flexible basis. They own offices all over the world so that a company who wants to start a subsidy or needs a professional place to work for some months can rent space almost everywhere. So the target group is different to coworking spaces and there is no community either.

1.2.1 | The Short History of Coworking

As it was said, coworking is a rather new phenomenon. But it is growing very fast. Since the first space opened in 2005 the number of spaces worldwide roughly doubled every year (Deskmag 2012a, p. 2).

Table 1.01: Number of Coworking Spaces Over Time (Deskmag 2012a, p. 2)

2006	2007	2008	2009	2010	2011	2012
30	75	160	310	600	1130	2150

Coworking started in the USA but today spaces open worldwide. It started as a self-organizing project where freelancers decided that they want to work in such a way. It is a classic grass-roots movement. Even today most spaces are founded by people who have a different main job and run the spaces on the side. Spaces provide space, internet connectivity and some other facilities but no direct services like catering, phone service etc.
The main idea – to offer a shared workspace for creative people – is of course not completely new. On a more urban scale it already existed for centuries. Renaissance Florence, artists' colonies in Paris and Berlin in the early 20th century or more recently places like Soho in New York and London are well known examples (Jones et al. 2009, p. 21; Harrison 2006, p. 129; Friebe/Lobo 2006; Florida 2002). It is the core thesis of Florida's (2002) work that creative people with a similar mindset flock together in cities where they are welcomed and find good working conditions as well as clients/customers. In these settings coffee houses and clubs played an important role as gathering places and information hubs. Still coworking spaces are something new. Other than cafés and clubs they are dedicated to work. They are not really public places but they are also not 'invitation only'. They combine both poles.

> "Coworking is the best of both worlds. You have the collegiality and the collaboration of the office space without the politics, you have the coffee and the mix of ideas and the informality of the coffee shop without having to fight for an electrical outlet at Starbucks, and you have all the freedom and flexibility of working at home. So these sites have popped up all over the world in the last two years." (Polly La Barre, CNN reporter cited in Jones et al. 2009, p. 10)

Hard data on the coworking movement scarcely exists. The same is true for research publications (existing ones are for example: Spinuzzi 2012; Carrera et al. 2009). The best sources so far are the three global coworking surveys conducted by Deskmag[11], an online magazine[12] about coworking and one of the most important communication platforms for coworkers as well as the public organ of the movement.

1.2.2 | Who is Coworking and Why?

Deskmag surveys found that the average age of coworkers is 34, that about two thirds are male, and that most of the coworkers have a university degree (Deskmag 2012a, p. 3). Most of the coworkers, 50%, are freelancers with another 14% seeing themselves as entrepreneurs. 24% say that they are employees of some sort (Deskmag 2012b).[13]
From an occupational point of view Spinuzzi (2012, p. 420f) found that the diversity is very high. Before joining a coworking space most members were working at home (Deskmag 2012a, p. 4) and about three quarters tried to work from coffee-shops (Spinuzzi 2012, p. 421). This is also a main precondition for coworking: people are able to decide where they want to work (see Spinuzzi 2012, p. 419). To work in a coworking space is also no absolute decision which makes working somewhere else impossible. On the contrary: 90% of all coworkers say that they work in other places as well, most often at home (80%) (Deskmag 2012c). Also the time people spend in the space differs. Only 40% are there every day, 19% three or four times a week, 16% one or two times a week, and the rest only a few times a month (Deskmag 2011b). The Deskmag (2011b) studies also show which facilities of the spaces the coworkers need and value most. On top and without surprise 99% depend on internet access. Printers are needed by 80% and closed meeting rooms by 76%. These are both amenities coworkers may not have at home. For a more social perspective 61% like to have a café in their space and 50% use a kitchen to prepare drinks and meals.
All the things said about the people occupying coworking spaces does not answer why they do so. Their kind of work seems to be possible from home. If asked why they started

[10] For further information on Regus and all the data used in this paragraph see: http://www.regus.de/products/offices/index.aspx (accessed 30.1.2013).

[11] Deskmag conducted the global survey first in 2010 and repeated it every year since. The number of participants is growing like the number of spaces: 2010 with N=661 (Deskmag 2010), 2011 with no exact number available but N=1500+ (Deskmag 2011a), and 2012 with N=2007 (Deskmag 2012b).

[12] See www.deskmag.com

[13] The relatively high number of employees may come from the fact that people in small startups are technically employees and that also the space itself employs people to run it.

coworking, 66% answered because of the atmosphere in the space. 62% name the community, and 57% the interaction with others (Deskmag 2012b). Spinuzzi (2012, p. 402) describes the main problem of working from home as "professional isolation". So they come to avoid this isolation and fight self-motivation problems which often come with solitude (Spinuzzi 2012, p. 421). In coworking spaces they find diverse but likeminded people. The coworking culture is an important benefit of working there (see discussion below). Being present in such an environment can positively influence one's own productivity, creativity, wellbeing and social embeddedness. For example 85% felt less lonely and 75% reported to be more productive (Deskmag 2012a, p. 6) since joining the space. Overall: what can be said is that coworking has to have a benefit for the coworkers simply because they keep doing it.

1.2.3 | The Values & Culture of Coworking

"Coworking is a self-directed, collaborative and flexible work style that is based on mutual trust and the sharing of common core objectives and values between members." (Deskmag 2012a, p. 3) What exactly are these shared objectives and values? Reflecting exactly the answers on why people join the space, **the** most important value is to be part of a community, answered by 94% (Deskmag 2012a, p. 9), followed by interaction with others, flexible work styles, and serendipitous encounters, discoveries & opportunities (Deskmag 2012a, p. 5). If coworkers are asked how they describe coworking with adjectives, the four most often answers are: 'fun', 'creative', 'friendly', and 'inspiring' (Deskmag 2012b). Hence the type of behavior leading to such an atmosphere and this atmosphere itself should be considered as values. Kwiatkowsky (2011a, p. 19) provides a list of those values shown in image 1.05.

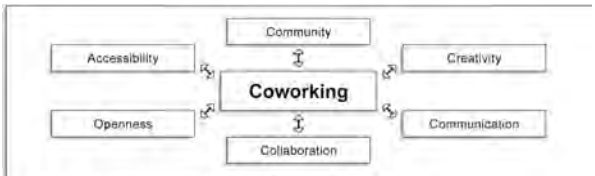

Image 1.05: Coworking Values (based on Kwiatkowsky 2011a, p. 19)

(A) Community

Having a strong community that provides a sense of belonging is the most important value. It is seen as the central success factor a coworking space depends on (see Jones et al. 2009). Coworking is not seen as a service one buys. It is a two way relationship. People benefit from and contribute to the community equally (Kwiatkowsky 2011a, p. 21). The people who are employed by the spaces are often called community managers. Their central role is to foster and to support the community (see Spinuzzi 2012, p. 432). In a traditional company the co-workers build a community too. Employees work together as colleagues and may become friends. For freelancers this kind of social embeddedness is often missing. They come to coworking spaces to be part of such a social group.

Within the community social interaction is valued very highly both informal and formal. Just eating together in the space and talk about the projects of others broadens one's own horizon. Also more formal (in the sense of pre-planned) community events are often happening in coworking spaces to bring the community together. The simple willingness to spend time together is important.

(B) Accessibility

This value has different facets. First coworking spaces are accessible for a very diverse group of people. Diversity itself is a value as well. People should feel welcomed and the atmosphere should be warm. Second it means financial accessibility. Coworking is a service within the social group that may be called the digital bohemians and the price of a desk should be as low as possible. Coworking spaces are not profit centers (see Kwiatkowsky 2011a, p. 21). Third it stands for being open and welcoming to guests e.g. during events. Forth it simply means physical accessibility for disabled people. In short: no barriers to become a coworker.

(C) Collaboration

Freelancers or entrepreneurs may work on their own compared to a traditional company with internal division of labor. But they still can work together and this is much appreciated in the coworking scene. Coworkers may find specialist services they can buy (e.g. web-design) within the community or they simply bounce ideas off each other to get feedback. Sometimes even new services or businesses might be born that lead to professional partnerships. The core value here is the individual willingness to work with other members (Kwiatkowsky 2011a, p. 21). Collaboration includes sharing in the sense of collaborative consumption and the spreading belief that access is more important than ownership (Kwiatkowsky 2011b, p. 33).

(D) Communication

Why should people who do not want to communicate and who are not willing to talk with others about themselves and their projects come to a coworking space? Maybe for the atmosphere that transports all the values but they would always be some kind of outsider just consuming but not contributing. Only through communication the benefits of coworking may happen. The willingness to actively share knowledge and to learn from others as is well important (Kwiatkowsky 2011b, p. 33).

(E) Openness

Openness does not mean open doors (see (B) Accessibility). It means an open mindset such as being open towards new

ideas and different points of view, being open to change one's own mindset and being open to learn (and teach) all the time.
Everything that is related to "open source" in the field of software development and the "creative commons" movement against an old understanding of intellectual property fits to coworking. The prerequisite for openness is trust. Without trust, e.g. that no one steals ideas, sharing those ideas would be impossible. Without the openness some of the benefits of coworking, like qualified feedback, cannot be realized. No surprise that the Deskmag survey (2012a, p. 9) found high levels of mutual trust. For example 83% said that they would leave their phone and laptop unattended in the space for a longer time. So trust is not only about ideas, it is also about material belongings.

(F) Creativity
New ideas are valued over old standard operating procedures. Most coworkers work in the creative industries. They are and need to be creative and they welcome such an attitude in others. Working in a coworking space is not routine. Not only the work differs, also the space and community changes over time. Continuous change is the result of continuous creativity and innovation. To welcome and value such developments is important to fit into a coworking community. New ideas are understood to be the basis and prerequisite to solve basically every problem.

The description of the set of coworking values shows two things. First: the values are highly interwoven. They depend on and relate to each other. Clearly distinguishing them and describing them in isolation is somehow impossible. It is one big picture. Second: the values of coworking are also always personal values of the coworkers. Values are first of all a personal thing. If people have the same values they can share them and turn them into the community's values. This also shows to external people which kind of mindset they have to bring with them to be able to become a part of the community. Of course a 100% match of the personal values and the shared ones is neither likely not needed to be part of the group. Furthermore community is a value of coworking but all the other values are better understood as values of this community.

To conclude on what coworking is, how coworkers understand themselves and how it all fits into the broader world of work it can be said that coworking spaces are the place for people who turn the industrial work paradigms upside-down (see Jones et al. 2009, p. 3). It is non-standard and new but this makes it even more interesting for research.

1.2.4 | Coworking Space Examples

To understand coworking spaces even better, especially in regard to their spatial structure and looks, this section will briefly present some space examples. Most spaces offer mainly flexible desks not exclusively rented by one member and about one half provides 24/7 access (Deskmag 2012a, p. 11). Spinuzzi (2012, p. 422f) classifies two basic types: (a) spaces that are inward facing meaning that they are primarily good for the people who work there and (b) outward facing spaces that are also designed for representation and to bring clients/customers in.

The pictures 1.06 to 1.10 show the workspaces of the HUB Islington (London)[14], one of the oldest spaces, founded 2005, and of Mutinerie (Paris)[15] Both spaces are located in old warehouses and not in office buildings. The pictures, all of them come from the space's websites, show how unusual

Image 1.06: HUB Islington

Image 1.07: HUB Islington

[14] The description is based on the website http://islington.the-hub.net (accessed 26.2.2013) and a personal visit of the space in July 2012. Images 1.06 and 1.07 from http://islington.the-hub.net (accessed 26.2.2013).

[15] Mutiny in German: Meuterei. The description is based on the website http://www.mutinerie.org (accessed 26.2.2013) and a personal visit in November 2012. Images 1.08, 1.09 and 1.10 from http://www.sharedesk.net/spaces/view/76/mutinerie/ (accessed 26.2.2013).

playful the work environment looks compared to offices. The furniture is mainly self constructed by the community. To give only one example, it uses table tennis tables as desks. Both places offer mainly free desking and provide a number of work-settings. They have a large open plan work-space but also enclosed meeting rooms. Mutinerie has a bar/kitchen area where members can prepare meals and the HUB has a small library corner. For events the spaces are highly flexible. Furniture is moved to make room for a larger audience as the Mutinerie pictures show. Both offer flexible membership subscriptions from 1-day-tickets to 24/7 access. The HUB network is special in the coworking world for another reason: at the moment 41[16] spaces exist worldwide and they understand themselves as one global movement with social entrepreneurs as the core target group. With HUBnet they also have an own global social network platform.

The pictures 1.11 to 1.14 show the workspaces of Dojo Voltaire (Paris)[17] and Office 129 1/2 (Darmstadt)[18] and both look very different to the two above, showing the wide range of looks coworking spaces can have.
Both spaces look more professional like normal offices. Dojo Voltaire uses low budget IKEA furniture and only rents fixed desks on a monthly basis to its members. A space for events does not exist but enclosed meeting rooms and a kitchen do. Office 129 1/2 instead uses very expensive designer furniture and looks very clean and generous. People have much more space around them. This design fits their target group: mainly architects and designers. They can also rent several desks or group offices at once.

The four spaces here have roughly the same size. But the brief description showed how big the variety can be. The conclusion is that coworking is not a coherent phenomenon but that different people with different mindsets and spatial needs may still find a suitable space because with more and more spaces opening their doors the variety to choose from in one city rises.

Image 1.08: Mutinerie

Image 1.09: Mutinerie

Image 1.10: Mutinerie

Image 1.11: Dojo Voltaire

[16] 41 is the number of existing HUBs in February 2013. The network intends to grow further, see www.the-hub.net (accessed 26.2.2013).

[17] The description is based on the website http://www.dojocrea.fr/index.html (accessed 26.2.2013) and a personal visit in November 2012. Image 1.11 from http://www.dojocrea.fr/ (accessed 26.2.2012). Image 1.12 from http://www.sharedesk.net/spaces/view/539/dojocrea-voltaire-coworking-paris/ (accessed 26.2.2012).

[18] The description is based on the website http://129einhalb.de (accessed 26.2.2013). Image 1.13 from http://129einhalb.de (accessed 26.2.2013), image 1.14 from http://www.sharedesk.net/spaces/view/690/office-129-12/ (accessed 26.2.2013).

2 | Ba & Theoretical Background

The introduction shortly introduced the term 'ba'. The theory section will use the framework behind the term to discuss the existing literature on creativity and creativity influencing environmental factors as mental ba (mindset, culture, shared values), physical ba (place, workplace design) and virtual ba (online platforms).

2.1 | The Concept of Ba

In the knowledge creation context ba was philosophically introduced and defined by Ikujiro Nonaka & Noboru Konno (1998) as follows:

"[…] ba can be thought of as a shared space for emerging relationships." (Nonaka/Konno 1998, p. 40) This is crucial: people share a place or space and because they do so they start to communicate and interact. Out of this interaction new valuable contacts can and will emerge. Valuable because communicating with them (e.g. getting feedback on ideas) has a benefit because all communication is also an exchange of knowledge (Luhmann 1995, p. 137ff). Lasting relationships emerge from ongoing communication on shared topics and interests among the people in that ba.

"[…] ba is a context that harbors meaning." (Nonaka/Konno 1998, p. 40) Within a ba, certain things (words, symbols, artifacts) have certain meaning for the people in the ba but not beyond. It also says that things happening in the ba are meaningful for the community of this ba. Furthermore the meanings define the ba: there can be a ba around football and another one around quantum physics. Meaning creates a sense of belonging.

"Value creation […] emerges from interaction within ba but is not restricted to the physical ba. The concept of ba unifies the physical space, the virtual space, and the mental spaces." (Nonaka/Konno 1998, p.41) Here again is said that communication among members of the ba is what makes it successful. Furthermore: the Japanese ba does not only translate as physical place. A shared mental space of values and beliefs and shared assigned meaning is of even more importance. It is the common mental ground on which the communication is started and from which it gets its direction (football or quantum physics). For a company the shared mental ba is for example the mission statement or the work climate and the shared physical ba its office. Virtual spaces (like online forums) come into play for knowledge creation and exchange if physical and time proximity is impossible. They also can create a sense of belonging.

Image 1.12: Dojo Voltaire

Image 1.13: Office 129 1/2

Image 1.14: Office 129 1/2

"Ba is of fundamental importance for knowledge creation, and this creative process is amplified when all these ba conjoin […]" (Nonaka/Konno 1998, p. 41). This is crucial: creativity is a process which is fostered if people interact – and people interact in a ba. Hence ba is an environment that fosters creativity. People can be creative there and build new relations which will also lead to new creative outcomes. If all three ba (mental, physical, virtual) exist simultaneously, the effect can be maximized.

"The dynamics of ba are a function of the spatial design." (Nonaka/Konno 1998, p.53) In this simple phrase Nonaka & Konno assign a special role and power to the physical ba.

This directly relates to the research question of this thesis. To see if this claim holds true is the paraphrased aim of this study.

The definition and description of ba above sees the fundament in the shared meanings and values that create the mental part of ba. The physical part of ba (being in one place) only drives the dynamics of the ba as a whole. Understanding it as a moderating variable is right. Looking back to the model in image 1.02 in the introduction, this can now be un better derstood. The social environment is the mental ba and the workplace design is the physical ba. The discussions above helped to explain why the mental ba (shared values/topics) alone is more important as the physical ba (being in one place) is alone. The shared mental ba provides guidance and the ground on which new relations/contacts grow. The whole picture can also be described in a software/hardware metaphor. Mental ba is the software, physical ba the hardware. The hardware is nothing without the software but how fast the software can run depends on the quality of the hardware.[19] But the model image needs an expansion to fully show how ba works. Because the value created by the ba comes from the interaction and the emerging contacts they must be included into the model as well. The new model is drawn in image 2.01.[20] To sum up:[21]

> "The essence of Ba is the contexts and the meanings that are shared and created through interactions which occur at a specific time and in a specific space, rather than a space itself. Ba also means relationships of those who are at the specific time and the specific space." (Nonaka/Toyama 2007, p. 23)

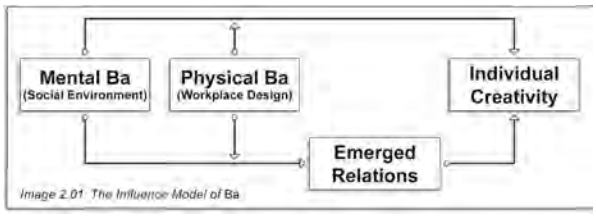

Image 2.01 The Influence Model of Ba

2.1.1 | The Philosophical Foundation of Ba

The concept of ba was not invented by Nonaka & Konno. They just introduced it to the field of management science but it is much older. The Japanese philosophy of place dates back to Kitarō Nishida in the early 20th century, who is the father of the modern Japanese philosophy, and to Hiroshi Shimizu who worked on the concept since the Eighties (Nonaka/Konno 1998, p. 54). The importance of place, space and context is deeply rooted in Japanese culture (Latka 2003)[22] and can hardly be overemphasized. Shimizu developed a whole "culture of place" theory (Latka 2003 p. 84) and he showed that social systems can be understood in a spatial way. Events and everything else including people are defined by the space they are happening or being in; by ba. Shimizu puts it this way: "Ich denke, dass zwischen Selbst und Ort folgende sich gegenseitig spiegelnde Beziehungen existieren: (1) ‚Der Ort spiegelt den Ort in das Selbst.' (2) ‚Das Selbst spiegelt das Selbst in den Ort.'"[23] Personal identity and place define each other. One alone would be nothing – the place creates the something[24]. This fits also to Luhmann's social systems theory perspective that something can only be defined by distinguishing it from its environment which it is not (Luhmann 1995, p. 176f). Thomas Latka combines these two approaches and develops a theory of topological social systems[25] (Latka 2003, p. 4) in which the systems is defined by being in a place instead of not being in the environment (Latka 2003, p. 89). But simply because people are coming together in one physical place they do not constitute a ba. It has more than the spatial dimension. To create ba, people first of all need to share a mental space of values and/or goals because ba is social by nature (Latka 2003, p. 240).

The topological social system is different to a traditional network theory model as image 2.02 shows. In the classic networks people (the knots) have relations to each other

[19] The software/hardware metaphor in the context of workplace design but without the concept of ba is also used in Chan et al. 2007, p.10 and Welter & Olma 2011, p. 85.

[20] The virtual ba is not included in the picture because it has a minor influence which will be discussed later. Theoretically it would take the same place as the physical ba moderating the impacts in the same way.

[21] Nonaka & Konno (1998) introduce ba to support their theoretical model of knowledge creation called „SECI" – Socialization, Externalization, Combination, Internalization – (see Nonaka/Konno 1998, p. 42f). They assign a special type of ba to the four steps of the SECI "knowledge spiral" process – originating ba, interacting ba, cyber ba, and exercising ba respectively (Nonaka/Konno 1998, p. 46). Ever since Nonaka was focussing on these four steps and types of ba (see Nonaka et al. 2000a/b; Nonaka/Toyama 2005; Nonaka et al. 2006; Ichijo/Nonaka 2007). They are related to the three types of ba as mental/physical/virtual but they are not the same. Each of the four ba consists of and emerges in a different combination of the three occurrences of ba. For example a direct transfer from tacit to tacit knowledge which is the „socializing" step happening in „originating ba" needs physical proximity (= physical ba) to be successful (see Nonaka/Konno 1998, p. 43). This thesis is focusing on the three forms and the underlying concept of ba Nonaka describes and which itself is coming from the Japanese philosophy of ba developed by Nishida & Shimizu, not on the SECI model.

[22] The text by Nishida and Shimizu are mainly in Japanese. This is the reason why I am not using original source but refer to Latka (2003) who conducted in depth research in the field of the Japanese philosophy of place.

[23] Because a second translation to English would most likely have changed the meaning the professional translation from Japanese to German the translation by Latka was retained. Source: Shimizu, H. (1997), sôsakuteki bashoron, in: Kawanami, A. (edit.), bashoron no shuju sô, Tokyo, 1997, p. 29-84, p. 51, cited in: Latka 2003, p. 77.

[24] See Shimizu, H. (1996), seimeichi toshite no ba no ronri, Tokyo, 1996, p. 193. cited in: Latka 2003, p. 84.

[25] In the German original: Topisches Sozialsystem.

called ties. They can be strong (see Krackhardt 1992) or weak (see Granovetter 1973) and (closed) groups of people with many relations to each other form a dense network. Latka's model defines the membership to a network by relations (ties) which intercept in and origin from one point, the ba (Latka 2003, p. 226).

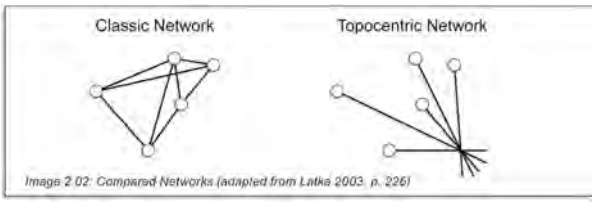

Image 2.02: Compared Networks (adapted from Latka 2003, p. 226)

Coworking spaces are topocentric networks. Information exchange happens through the coworking space (the physical ba) and it works exactly like a switch in computer networks. The ba connects the members which form the community of ba and share a similar mental ba. The center of the topic net is the physical coworking space (physical ba) that may be supported by a virtual ba as well. Of course only the first interaction and the first exchange of information are done through the ba. Later (in time and space) there will emerge a direct relation (tie) between two individuals. It may outlive the time they are members of the coworking space and hence the time they belong to this ba. That is precisely why Nonaka & Konno (1998, p. 40) speak of ba as a shared space for emerging (direct) relationships. The ba gives birth to a network of ties that can be understood with classic network theories.

2.1.2 | Further Research on Ba

Most of the research on ba is not empirical (De Alvarenga Neto/Choo 2010, p. 4) but it is still helpful to understand how ba can be created. In the most extensive review on ba Rivadávia de Alvarenga Neto & Chun Wei Choo (2010) examine 143 papers and books that have been published since Nonaka & Konno's first text. Most of the research is in the field of knowledge management and knowledge creation. The findings of the review are classified in four groups of enabling conditions to create ba:

Social/behavioral conditions: care, trust, respect, open dialogue, autonomy, contextual social interactions.
Cognitive/epistemic conditions: central are shared values, ideas, beliefs and commitment, exposure to diverse data and inputs, formal as well as informal communities of interest.
Informational conditions: online based groupware and virtual communities.
Business/managerial conditions: managers role, leadership, stimulus to social and informal gatherings, right design can be important.

(see De Alvarenga Neto/Choo 2010 p. 4ff)

These dimensions help to operationalize ba for the empirical research of this thesis. The findings above and the coworking values are congruent. Interestingly the effect of workplace design is mentioned but not how the design must be to be enabling and not disabling. One conclusion of the review is that ba remains underexplored both theoretically and empirically (De Alvarenga Neto/Choo 2010, p. 8).

Takahiko Nomura (2002) asked how ba must be designed to support knowledge management. The goal of ba here is knowledge transfer and creative interaction. He found that the design of ba should be closely related to the strategy and corporate culture of the firm (Nomura 2002, p. 263). The source of innovation is identified to lie in the chemistry (mental ba) between people from diverse backgrounds (Nomura 2002, p. 270) as well as in spontaneous interaction (Nomura 2002, p. 275). The emerging relations claim by Nonaka & Konno (1998) is supported. Nomura also identifies one central problem in creating successful ba from a managerial viewpoint: workspace design (physical ba) is the responsibility of facilities management and IT tools (virtual ba) are the responsibility of the IT department (Nomura 2002, p. 265). To create a successful ba, a fit between them and a strong relation of all three types of ba to the knowledge management objectives are crucial because this is the source of competitive advantage (Nomura 2002, p. 263). These findings are also useful and applicable in the case of coworking spaces. The insight that companies succeed if they focus on people with knowledge instead of knowledge separated from people as information (Nomura 2002, p. 268) fits the coworking philosophy as well as the ba approach.

One study that quantifies ba to support knowledge creation comes from Shih-Wei Chou & Su-Ju Wang (2003) in which data is collected from 232 companies in a wide range of sectors in Taiwan. The study uses ba but it has a strong emphasis on the influence of IT tools. They find that IT capabilities are crucial for knowledge creation (see Chou/Wang 2003, p.176) leading to the assumption that such virtual ba will work in coworking spaces as well. Further they found that mutual trust is important to create ba (Chou/Wang 2003, p. 175). That can directly be assumed to be the case in coworking communities as well. Other variables are managerial interventions and central vs. de-central decision making. Autonomy is found to have significant influence on knowledge creation but these variables are not applicable to coworking because it is not a traditional organ-

ization. Freelancers are their own managers and leaders. Autonomy is naturally given.
Overall the whole study is very limited to traditional views of organizations. The potential value of informal and spontaneous internal interaction for example is not mentioned at all.

Another quantitative study (Senoo et al. 2007) researched the creation of "active ba" (a ba that supports creativity) through changes in the office layout from fixed and dedicated desks to a free desking environment (physical ba) and through the introduction of personal profile-webpages on the intranet (virtual ba) in two Japanese companies (Senoo et al. 2007, p. 306f). A control group that did not switch from fixed to free-desking existed as well. The study found that ba was activated through the changes. More information, spontaneous and direct communication happened after the physical change and more information was shared after the virtual change (Senoo et al. 2007, p. 312). The satisfaction of the free-desking group went up and from the fixed desking group down because they saw what improvements they missed (Senoo et al. 2007, p. 308). All these changes relate to different types of ba. The findings are useful to understand that different types of ba have different influences on creative process of knowledge creation. For the setting in coworking spaces where free desking is common it can be assumed that an active ba exists.

2.2 | The Aim of Ba: Creativity

The purpose of creating ba is to support and foster knowledge creation and hence creative behavior (Nonaka/Konno 1998). The aim of this thesis is to research how ba influences creativity and hence creativity is its dependent variable and needs to be defined and explained. Furthermore it is important to see which variables can foster or hinder creativity.

2.2.1 | What is Creativity?

Creativity, being the core of a whole new paradigm, is still vague and not easy to define or to measure (see Handzic/Chaimungkalanont 2004, p. 59). It describes the ability of every human being to create new ideas and things by combining knowledge or out of the blue. The word itself origins from two latin words: creare what means to develop something new and crescere what means growth and becoming (Lotter 2007, p. 58). The most broadly used definitions of creativity in the field of organizations and management come from Amabile: "[…] creativity is the production of novel and useful ideas by an individual or small group of individuals working together." (Amabile 1988, p. 126) This is a definition of the creative outcome: the product/idea. Creativity can also be defined as the process that leads to the idea: "Creativity, at least as I deal with it […], is a process by which a symbolic domain in the culture is changed." (Csikszentmihalyi 1996, p. 8) Mihaly Csikszentmihalyi implies here also the evaluation of the value of the idea. Only if it is useful it will be added to the cultural stock of memes. Innovation, another term important for companies and directly related to but not identical with creativity is defined "[…] as the successful implementation of creative ideas within an organization." (Amabile et al. 1996, p. 1155) Still it is hard to decide if something new is also creative and to which extent. Different people may have different opinions about that. To solve this problem, Amabile (1996) formulates her consensual definition of creativity: "A product or response is creative to the extent that appropriate observers independently agree it is creative" (Amabile 1996, p. 33). And further on: "A product or response will be judged as creative to the extent that […] it is both a novel and appropriate, useful, correct or valuable response to the task at hand […]" (Amabile 1996, p. 35).
For this thesis creativity is the individual or collaborative process that leads to new and useful ideas that are judged as such by the creative people themselves and which will proof their value through application in new developed products or services.

2.2.2 | Influencing Creativity

The research question is how space influences creativity processes and therefore existing theory and evidence of how creativity can be influenced and which kinds of variables (all kinds, not only space) are known to influence creativity are crucial. The existing literature in this field is extensive, both theoretically and empirically.

On a personal creative task level Amabile (1988, p. 130ff; 1996, p. 84) sees three important supporting factors. (1) Domain-relevant skills describe the need for existing knowledge and skill as a prerequisite to be able to be creative on a given task. To be creative in a highly specialized field of science for example one needs in depth knowledge of this field. (2) Creativity-relevant skills describe the possible need for methods and techniques to approach a given task that asks for creativity. It also includes a creative personality and mindset that values creativity. To be creative people need to like to be creative and think of themselves that they are able to be creative. (3) Intrinsic task motivation describes that people need to have an interest in the task because they want to do it and not because others order them to do it (see also Oldham/Cummings 1996, p. 609; Shalley et al. 2004, p. 936f). Obviously the task itself needs to ask for a creative approach and solution. Simple standardized and routine work is not creative.

For the group of social and organizational environmental factors that support creativity Amabile et al. (1996) and Amabile (1997) developed the KEYS: Assessing the climate for creativity survey tool[26]. It works on the level of individual perceptions of environmental work climate and support factors (Amabile et al. 1996, p. 1157). The tool covers (A) organizational and supervisory encouragement (like openness towards new ideas, constructive feedback), (B) work group (team) support (like cooperation and collaboration, team diversity) (see also Cummings/Oldham 1997, p. 29), (C) freedom and autonomy, (D) sufficient recourses, and (E) challenging work (task is non-routine and matches interests) as positive supporting factors as well as (F) workload pressure and (G) organizational impediments (conservatism, rigid management) as negative prohibiting factors (Amabile et al. 1996, p. 1159ff; Amabile 1996, p. 12; see also Shalley et al. 2004, p. 938ff).
Silvano Arieti (1976, p. 312ff) collects dedicated social factors that influence creativity: openness towards diverse cultural stimuli, free access to these diverse media, individual exposure to this diversity, tolerance and interest for diverging views and interaction with such people.

Communication and open exchange of ideas are important for creativity. Following these findings and the definition of ba as a shared space for emerging relations (Nonaka/Konno 1998, p. 40) it becomes clear that not every new contact or every interaction will result in improved creativity. The right contacts are needed. They can serve as creative role models (Shalley et al. 2004, p. 947) or provide with their special knowledge input which is exceptionally valuable for the creative task at hand (Shalley et al. 2004, p. 949). It can be concluded that contact to the right people is a strong facilitator of creativity. A ba is the place where such valuable contacts can be found and new ties can be established (see Bear 2010).
From an interactional perspective Puccio et al. (2000) conducted research on the role and influence of the fit between personality and organizational environment on creative performance. They found that people with an innovator mindset perform better on creative task and worse on routine tasks than people with an adaptor[27] mindset do (Puccio et al. 2000, p. 239f). Hence the fit of both is important. (See also Shalley et al. 2004, p. 942f)

Spatial factors as possible influences on creativity are basically ignored by Amabile. The physical work environment is only mentioned once as an "other" factor but not elaborated at all (Amabile 1996, p. 227f). The other creativity researchers mentioned above ignore it too. Nonaka tries to fill this gap in theory with his ba concept and others (Martens 2011; Handzic/Chaimungkalanont 2004; Spath/Kern 2003; Mitchell McCoy/Evans 2002, Duffy 1997) contribute in this field as well. Their further review and discussion follows in the physical ba chapter (2.4).

Combining all these approaches into one model is now possible. Image 2.03 shows that creativity depends on individual, task and environmental characteristics. The last-mentioned ones can be split further in social, organizational, and spatial factors. Some of the variables in these classes are very basic prerequisites to make creativity possible at all, others are of a more fostering nature.

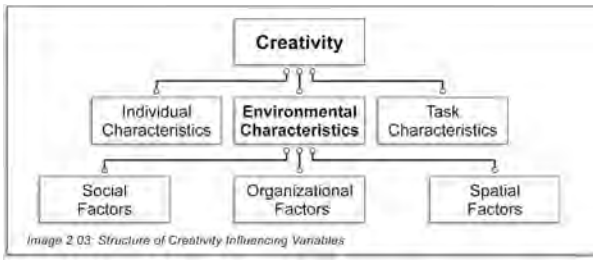

Image 2.03: Structure of Creativity Influencing Variables

Coworking as a phenomenon is a very good research object for the question how space influences creativity. It may seem to be very new and not well enough researched yet, which is true, but the whole setting automatically controls for a number of variables described above that have influence on creativity.
(1) It controls for the task influences. People in coworking spaces are mostly freelancers and simply because they do "everything" on their own compared to companies with specialized departments they have a lot of variety in their workday and do not get stuck in routine work. Also they have to develop their own products and services. So it can be assumed that coworkers are doing a creative job in general.
(2) It controls for some individual characteristics. Connected to the task variety within the jobs and due to the creative needs these jobs have, it can be assumed that such people have a creative mindset and personality. This controls for the possibility that the "wrong" people are doing a job and therefore underperform. It can also be assumed that they are intrinsically motivated.
(3) It controls for organizational factors. There simply is no formal organization, no structure/hierarchy employees are embedded in. So influences from the organizational structure do not exist. Hierarchy is connected with all the influence leadership has on the creativity of subordinates. Freelancing coworkers do not have a boss who can treat them "right" or "wrong" in concerns of creativity support. They have the freedom creativity needs.
By applying this to the influence structure presented in image 2.03 the individual characteristics and the task char-

[26] KEYS is no abbreviation. It is simply the name of the tool and refers to key factors to foster creativity. It is also a registered trademark.

[27] For the innovator/adaptor aproach on individual cognitive style towards work and creativity see Kirton (1994).

acteristics as well as most organizational factors need no further elaboration. The coworking setting controls for them. This leaves the spatial and social factors – also known as physical and mental ba – isolated which is perfect to answer the research question. They need further elaboration.

2.3 | Mental Ba

Mental ba as defined by Nonaka & Konno (1998) are shared experiences, values, ideas and ideals. Mental ba exists in the heads of people. A lot of the factors of mental ba that support creativity are factors of the individual personality of people. This is not a disadvantage of the model. It is its basis. People of a similar kind of personality do connect more easily to each other.

This thesis examines if the values of coworking spaces and hence their work culture and climate fit (A) to the theory and research findings of creativity supporting factors in the social work environment and (B) to the supporting factors of active ba in the ba theory literature. Table 2.01 compares these variables identified in the previous chapters.

Table 2.01: Comparison of Coworking Values with Ba and Creativity Support Variables

Mental *Ba* Support		**Coworking Values**
Shared values		Community
		Inviting/Inclusive
"Chemistry"		Belonging
Care		Warm atmosphere
Open dialogue		Open knowledge exchange
	Creativity Support	Appreciate creativity
Trust / Respect	Trust	Trust
Autonomy	Autonomy	Autonomy
Diversity	Diversity	Diversity
Social interaction	Role models	Social interaction
Communication	Communication	Communication
	Open for new ideas	Open to new ideas
	Broad interest	Continuous learning
	Mistake tolerance	Constructive feedback
	Collaboration	Collaboration
	Team support	Cooperation
	Spontaneous interaction	Informality

Mental ba, by definition, encompasses shared values. The set of coworking values, that are shared within the spaces' communities and form the coworking culture and climate, do broadly overlap with mental ba support factors. One of the things coworking communities value is creativity. That is the most important prerequisite to actually foster it but there is also a broad overlap of coworking values and known creativity support factors (and mental ba support factors). This listing strongly suggests that the culture and climate of coworking spaces is a true greenhouse for creativity – or in other words: is a mental ba. Climate creates a creative buzz in the space that is a sense of work in progress, ongoing communication and collaboration (see Martens 2011, p. 74).

Culture & Climate

What is culture and what is climate? These two terms are important but it is hard to clearly separate them because researchers use similar variables to describe both (Denison 1996, p. 619). In his meta-study on the question Daniel Denison (1996) argues that culture is more deeply rooted in an organization, its history and values and that climate is more temporarily situation and behavior oriented and makes the cultural values observable by the members (Denison 1996, p. 624, 644).[28] Climate (ideally) is culture in action.

To better understand the concept of organizational culture and how it is composed the model of Edgar Schein (1985) is useful. Authors like Lundy & Cowling (1996) simply define culture as "The way we do things around here" but Schein (2004, p. 26) separates three distinct levels of culture: (1) artifacts, (2) espoused values, and (3) basic underlying assumptions. (1) Artifacts, on the surface of culture are "[...] the visible, tangible, and audible results of activity grounded in values and assumptions." (Hatch 1993, p. 659) Artifacts (behavioral like eating together every day, social like welcoming only women, communicational like jargon or spatial like buildings and workplace design) can be observed by everyone, also by people who just visit the organization. But to decipher their meaning is hard because it is rooted in the deeper levels of culture (Schein 2004, p. 25ff). In the case of coworking spaces exemplary artifacts would be the type and amount of events, the design of the space and selection of furniture or the website design. (2) The coworking values which are stated explicitly build the middle level of Schein's culture model. Also strategies/visions and an organization's philosophy belong to the espoused values (Schein 2004, p. 28f). (3) The deepest level of culture is implicit underlying assumptions. They are unconscious taken-for-granted beliefs that are not questioned anymore (Schein 2004, p. 30f). They are assumed to be the natural state of affairs. They were, are, and always will be[29]. For coworking this is the lifestyle and (new) understanding of work as a self directed part of life and the technology that enabled people to work everywhere every time that led to the invention of coworking spaces in the first place.

To conclude: Assumptions are manifested by values and these are realized by artifacts (Hatch 1993, p. 660). Hence

[28] The distinction can also be described with a meteorological metaphor: climate and weather. The climate (representing culture in organizations) is the broad setting that can change only slowly. The weather (representing climate) is more temporal and can change quickly but it always depends on the climate. Some forms of weather are not possible in a certain climate zone and some sort of organizational climate is prohibited by the underlying culture as well.

[29] The problem of taking things for granted is taking them for granted. For example people normally think that humans have five senses because everyone shares this opinion. But in reality humans have nine senses. Changing this assumption is hard because most people never think about the possibility that there are more senses (Robinson 2009, p. 30ff).

they all have to fit to each other. The assumptions build the key for understanding a culture and they are also the place where potential change has to start.

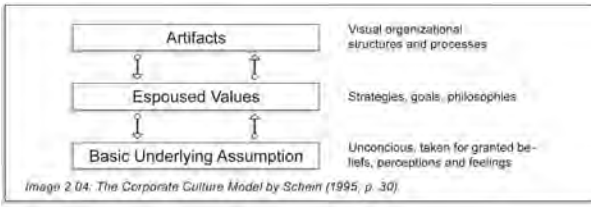

Image 2.04: The Corporate Culture Model by Schein (1995, p. 30)

How does a culture, and hence a ba, for creativity look like? According to Martins & Terblache (2003, p. 64) it is important for an organization to embed the appreciation of creativity as a basic norm (=underlying assumption) into its culture. In the end it is basically a culture that reflects and includes as many factors as possible from the lists in table 2.01. At the basis it needs to provide emotional wellbeing for its members (Kristensen 2004, p. 89). It needs mutual trust to encourage open communication which is better informal than formal, people should have diverse backgrounds, autonomy as well as an interest to learn. Tolerance for divergent opinions and mistakes is needed (Martins/Terblanche 2003, p. 70ff). Furthermore a vision that promotes creative behavior will help (Martins/Terblanche 2003, p. 69). Some of these variables are more important than others in regard to creativity. To give one example: open exchange of ideas (that will foster creativity) and knowledge is impossible without trust. But creativity is possible without open exchange of ideas. In the case of coworking spaces this is given by their self image and the other variables are embedded within their cultures.

Quantitative research to support these claims but focusing on single variables exist as well: Markus Bear (2010) looks on the diversity of a network and the individual openness to face this diversity and finds in a sample of N=336 (Bear 2010, p. 595) that network size as well as the interaction of network diversity – or willingness to face it – have significant influence on creativity (Bear 2010, p. 597f). Handzic & Chaimungkalanont (2004) look on the influence of informal socialization on creativity from an individual perspective. They find in a sample of N=93 that informal socializing is a key driver for creativity and is further supported by willingness to socialize and organized socializing (Handzic/Chaimungkalanont 2004, p. 61f).
Even if such findings provide a clear direction, more empirical research on culture's influence on creativity is needed (Martins/Terblanche 2003, p. 73).

The mental ba of shared values and goals is the prerequisite to make a group of people a community and to make the place this community occupies a physical or virtual ba. How well this place is designed then will trigger higher or lower levels of creativity. The advantage of a ba, not only the mental ba but all three dimensions, is the spatial characteristic of the concept. Because a group of people already creates and shares a ba someone else can join in even if not having the "perfect" personality. There is no need that everyone in the ba shares the same values or does so in the same intense. The already existing ba will influence the mindset of the newcomer and assimilate[30] him or her over time.

2.4 | Physical Ba

The values of coworking are stated by the space communities themselves and the cultural and social variables supporting creativity and creating ba are known from theory. Hence the discussion of mental ba and its supporting variables in the case of coworking was straightforward. In this section for physical ba it will be more complicated. Coworking spaces do not state why they have one spatial design and not another and research on physical space influencing creativity is scarce. Hence first a look on workplace design theory in general is needed to derive spatial variables that influence creativity. This is an important prerequisite before looking into how coworking spaces meet these variables.

According to Nonaka & Konno (1988, p. 53) the physical ba, like the workplace design, is responsible for the dynamics in knowledge creation and creativity. It can regulate and hence foster how much creative output is realized from a mental ba's potential.
Rather than the space having a direct effect, it is a resonance volume for the community (Latka 2003, p. 183) where actions and intentions are amplified. It has a "here and now" quality (Nonaka et al. 2000a, p. 15).

It is true that the technological development made it possible to work everywhere and to free people from the need to be present in the office. But all the theories like "death of distance" (Cairncross 1997) and "Atopia" (Willke 2001) from around the turn of the millennium that predict a future where place is irrelevant were proven wrong by developments like coworking spaces and the flocking of the creative class (see Rainie/Wellman 2012, p. 100f; Florida 2002). So the question what makes place so important remains. This chapter explores how a workspace needs to look like to foster creativity, hence how they create ba. As said this topic is not well researched (Davis et al. 2011, p. 22; Chan 2007, p. 6; Kristensen 2004, p. 89, Mitchell McCoy/Evans 2002, p. 409). Some sources, mostly practical books on workplace design like van Meel et al. (2010, p. 25) Eisele & Staniek

[30] Assimilation has a positive connotation here but of course the example holds for negative assimilation as well. Sects are also a mental ba in the sense of the philosophy of ba, but not necessarily in Nonakas definition.

(2005), Duffy (1997) or Davis (1984, p. 277), state that the space can stimulate creativity. But these statements are simply based on experiences or anecdotes and not on valid research findings (Grabbe 2011; Davis 1984). What they do not explain is how a creativity motivating workspace – a physical ba – actually looks like.

2.4.1 | Workplace Design Theory

Obviously the workspace should be designed in a way that it supports the work carried out in it (van Meel et al. 2010, p. 19). This was also the main driver behind the "scientific management" approaches on optimizing workplaces by Taylor (see Duffy 1997, p. 16; Vester 2009, p. 25). An advanced workplace design theory which exceeds considerations of mere optimization of tasks does not exist (Davis et al. 2011, p. 222). But the three variables model by Tim Davis (1984) is one suitable approach to build one: He states that (a) physical structure, (b) physical stimuli, and (c) physical symbolic artifacts influence behavior in the workplace (Davis 1984, p. 271).

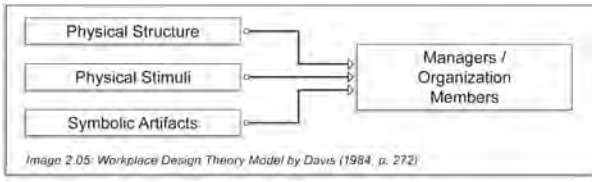

Image 2.05: Workplace Design Theory Model by Davis (1984, p. 272)

(A) Physical Structure

> "Physical structure can be defined as the architectural design and physical placement of furnishings in a building that influence or regulate social interaction. For instance, the structural configuration of walls, corridors, and entrance ways tends to restrict physical movement and limit social interaction." (Davis 1984, p. 272)

This is the most general level that can be read and understood easily from architecture drawings and plans. To enter and see the space is not necessary. As Davis says it has a strong influence on social interaction and hence creativity. This aspect of workplace design is also the best researched one. The findings by Thomas Allan (2007 for a summary of his intense research) resulting in the so called "Allen Curve" are well known: The probability of direct and spontaneous communication among employees diminishes with the physical distance (Allen 2007, p. 26; Shalley et al. 2004). It is very low once it exceeds 30 meters and there is basically no difference in the communication probability if someone is located on the next floor or in a completely different building. One knows the guy at the next desk but not the one at the end of the corridor. This is one reason why free seating without assigned desks is often promoted (van Meel et al. 2010; Duffy 1997) and Allen (2007) suggests that visual contacts within a building or central circulation spaces can enhance interaction.

The physical structure has a strong influence on people's behavior. And because communication, especially informal communication, is important for emerging relations (the second aim of ba) and knowledge exchange it has an indirect influence on creativity (the primarily aim of ba) as well.

(B) Physical Stimuli

> "Physical stimuli are those aspects of the physical setting that intrude into the manager's or organization member's awareness and influence his/her behavior." (Davis 1984, p. 274)

Stimulants tend to compete for attention (like a ringing phone) and they can cause major distractions from work but it is equally possible to intentionally introduce certain physical stimulants to cue wanted behavior (Davis 1984, p. 274f). Here the design as a continuous process is an important variable. For the case of creativity the theory of loose parts state that diversity and flexibility is crucial:

> "In any environment, both the degree of inventiveness and creativity, and the possibility of discovery, are directly proportional to the number and kind of variables in it. [...] It does not require much imagination to realize that most environments that do not work [edit: read: do not foster creativity] [...], do not do so because they do not meet the "loose parts" requirement; instead they are clean, static, and impossible to play around with." (Nicholson 1974, p. 223)

To translate that into actual settings it would suggest that colorful is better than monochrome, that free movable furniture is better than fixed desks and that an office with differently designed rooms is better than a pabulum.

But physical stimuli are not always positive. As said they can lead to distractions and can make work almost impossible. Shalley et al. (2004, p. 941) and also Hua et al. (2011, p. 815) found that distractions are higher if people sit closer together. This is also a main argument for the widespread use of cellular offices in Germany. In regular offices, where people have to be present to do their work, this is important. All work includes phases with need to concentrate. If this is not possible the workplace design fails (Hua 2011, p. 820). For coworking spaces this is not the case. As seen most coworkers use different places, like working from home, as well. They have a choice. The coworking space is the place for interaction and hence the ability to work alone and to concentrate is not crucial.

(C) Symbolic Artifacts

> "Symbolic artifacts are aspects of the physical setting that individually or collectively guide the interpretation of the social setting. For instance, the design of the office, the type and style of furnishings, the color of the walls, the presence or absence of carpeting, framed certificates or photographs displayed on walls or desks — all tend to communicate information about the organization and the people who work there." (Davis 1984, p. 276f)

This aspect of the physical workplace environment directly leads to Schein's (2004) theory of corporate culture and it's to level "artifacts". Symbolic artifacts are the physical manifestation of the mental ba. In fact: to understand the space as an artifact is the most widely accepted theoretical viewpoint also argued for by Gillen (2006, p. 64), Berg & Kreiner (1990, p. 61), and Gagliardi (1990) among others. This is because artifacts are a manifestation of a culture: space needs to be understood as an artifact because people "read" it like they read books (Berg/Kreiner 1990, p. 61). In real settings the fit between the culture and the design is crucial. This is not automatically the case but if it is not this turns out to be problematic. If there is no fit, the meaning people read from the design and the meaning people understand from the culture by other than physical artifacts (like leadership style) cognitive dissonance (Festinger 1962; Burnes 2009) arouses. This dissonance in perception is uncomfortable (Festinger 1962, p. 3) because people do not know which cognition they should follow with their behavior. And feeling uncomfortable kills creativity (Vischer 2007). To give an example: if a new culture promotes free and spontaneous informal interaction among all staff but top management still sits behind closed doors guarded by a secretary in a big corner office there is a dissonance. The (poured into) concrete spatial setting is read as an artifact and hence it is likely to kill the new culture because of the cognitive dissonance. The space here simply speaks the wrong language.

Language itself is another similar term to name a theory of workplace design. It can be described as a powerful language that can express values (Duffy cited in Stumpf et al. 2011, p. 20[31]). Values from Duffy's perspective is basically everything an organization wants to achieve in regard to vision, culture, climate, social interaction, productivity, communication and so on. The language metaphor is very strong and plausible. Space is a medium and like every medium it communicates something. It can of course also communicate bad things. "Wrong" design can inhibit performance and even make people ill (see Duffy cited in Stumpf et al. 2011, p. 15, 17).

[31] For this seminar paper an interview with Frank Duffy was conducted. The answers were the basis for that paper's method and findings. It is not a second order indirect citation.

2.4.2 | Workplace Design & Creativity

The research may be scarce but some empirical findings on the influence of the space design on creativity exist. They will be discussed in the following

Yuri Martens (2011) published a qualitative study based on interviews with creative professionals. He finds that spatial layouts that improve interactions help creativity because it is fostered by intense communication (Martens 2011, p. 68). The perception of the environment by its users is crucial here (also Kristensen 2004, p. 90). If individuals see a workspace as being attractive it can inspire and motivate. Hence it can work as a symbol/artifact communicating creativity (Martens 2011, p. 70; Haner 2005, p. 292). Also perceptions of what others do in the space can foster creativity:

> "[…] space can stimulate creativity by creating a "buzz" in the office. A sense that work is in progress, and you are part of it. Physically this […] [is] translated to a dense open plan, combined with places for relaxation and (informal) meetings." (Martens 2011, p. 74)[32]

If you are surrounded by creative people you may be more creative yourself (Martens 2011, p. 73). Martens further states that the space alone does not influence anything. Only if the space is an adequate representation of a culture that already has a creative identity, can it stimulate this culture and hence creativity (Martens 2011, p. 75). The mental and physical ba need to conjoin. Important here is flexibility so that people can control and change their work environment (Martens 2011, 75) and can choose from different settings (Martens 2011, p. 72). For a workplace to send the message that it can be played around with a slightly unfinished look is helpful (Martens 2011, p. 74) which fits to the theory of loose parts (Nicholson 1976). Also the individual personality is identified to have an influence (Martens 2011, p. 72). The "right" space for creative work may be different for everyone.

Mitchell McCoy & Evans (2002) conducted two related quantitative studies on which type of space fosters creativity. In the first study several hundred photos of workspaces were shown to students and professionals. They judged them on how well they think the environment shown in the pictures potentially support creativity (Mitchell McCoy/Evans 2002, p. 412f). Wooden furniture and a lot of visual detail correlated strong with creative potential (Mitchell McCoy/Evans 2002, p. 415). The same holds for

[32] The "buzz" itself is a type of work climate and therefore needs to be understood as a mental ba phenomenon that can be created/supported by the structural settings in the physical ba. See chapter (2.3).

furniture structures that support socialization and collaboration e.g. by face to face instead of rows (Mitchell McCoy/Evans 2002, p. 420). Negative correlation was found for cool colors, metal and concrete (Mitchell McCoy/Evans 2002, p. 415, 420). They are seen as unchangeable.
In the second study the findings from the pictures were tested in experiments. Groups of students were given creative tasks and half of the groups worked on them in a place rated very high for creative potential in the first study and one half in a space rated low. The creativity-test-tasks were already validated in other studies that served as benchmark (Mitchell McCoy/Evans 2002, p. 421f). Compared to this benchmark the groups in the high ranked environment performed significantly better. The groups in the low ranked environment matched the benchmark levels (Mitchell McCoy/Evans 2002, p. 423). Hence the 'good' space could foster creativity but the 'bad' space did not reduce it. These findings fit to the ba theory that physical ba can influence the dynamics of creativity.

What can be learned and inferred from the theory and findings for coworking spaces? First of all: most of them are open, dense and full of visual/spatial detail. Duffy's (1997) typology matrix clearly suggest that a club structure would be best for creativity support. Coworking spaces seem to follow this model. They provide different work settings (open plan desk, study booths, team spaces) and areas with dedicated use (coffee corner, meeting rooms) the members can freely choose according to their current needs.
Oliver Marlow (2011), an interior designer who worked on the design of several coworking spaces, reports from a brainstorming workshop with coworking space operators that exactly the already mentioned variables are experienced to foster collaboration and innovation. The members are allowed to play around with the space. Such behavior also generates a sense of ownership in the community (Marlow 2011). Furthermore it is good if the space is in a "perpetual beta" (Marlow 2011) state and not finished in a traditional sense. The design should not prescript what can happen. Space design can always evolve and adjust to changing needs.

The chapter described how a workspace should be designed to support creativity in different ways. Coworking spaces seem to match these ideals quite well and it can be assumed that they are able to foster creativity. A physical ba is a shared place that supports creative knowledge creation and emerging relationships. Hence suggesting that a coworking space performs as a physical ba is justified.

2.5 | Virtual Ba

Back in 1998 Nonaka & Konno addressed e-mail contacts or teleconferences as possible forms of virtual ba (Nonaka/Konno 1998, p. 40). Internet based social networks like linkedIn or XING were not invented yet but of course they are virtual ba. They are shared spaces for emerging relations. In Nonaka's model, developed to understand knowledge creation and transfer in companies, virtual spaces play an equally important role like physical spaces. Information technology helps here to combine the knowledge and to bridge physical distance between people. For example in knowledge management "communities of practice" (Nomura 2002, p. 264; Wenger et al. 2002) are a widely used form to organize people with specific knowledge and allow their exchange. Such a community can be spread all over the world. IT tools are widely used to operationalize knowledge management in corporations. But Nomura (2002, p. 264) and Wenger et al. (2002) among others argue that knowledge management overemphasized the power of such virtual tools. Applying this back to ba it suggests, that virtual ba is the least powerful. But it still has an influence. Towell & Towell (2001) found in experiments with N=172 students, that they have a strong sense of "being there" and "presence" (Towell/Towell 2001, p. 7) when working together in a virtual learning environment. Virtual ba was created. Also Senoo (2002) described the creation of virtual ba for emerging relations. Here web profiles of employees made it easy to find other people and get in touch with them.

In the case of coworking spaces virtual ba plays only a minor role. People who use coworking spaces are most likely already members of several virtual ba like linkedIn, XING, Google groups, newsletters, online forums, etc. And they heavily profit from these memberships. They manage their professional (and private) network through these channels and keep in touch with people all over the world. After all the Digital Bohemian is called "digital" for a reason. Coworking spaces are an alternative for the digital dominance. People use these spaces because of the spatial proximity to "work alone together". The reason to join a coworking space will always be the space, the direct contact, the events and the sense of the community some coworkers may call home. The virtual ba of coworking spaces, if it exists, will only have a further support function. Own closed social networks or groups on linkedIn are good for communication because everyone is reached on such a virtual bill-board and questions can be asked into the cloud. New valuable contacts can emerge here e.g. because member profiles allow searches for specific expertise. But in the end a coworking space is a "community of place" (Latka 2003, p. 183). For coworking space networks like the HUB with spaces all over the world virtual ba may be more important because spatial proximity is not given anymore. Still today most spaces exist in only

one place and that makes virtual ba for coworking spaces unimportant – especially in regard to fostering creativity. Virtual ba will be included in the research design of this thesis to use the complete ba-framework but as the argumentation has shown it is not central.

3 | Hypotheses

The theory explained coworking, creativity and ba with its three dimensions: mental, physical, and virtual ba. Adapting image 1.03 sums it up:

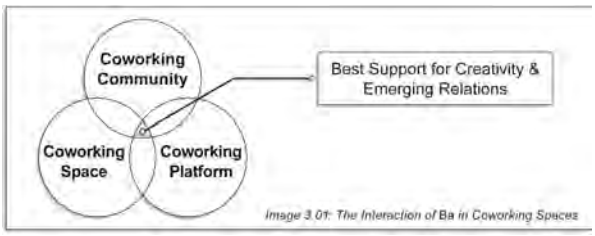

Image 3.01: The Interaction of Ba in Coworking Spaces

The theory showed which measurable factors are needed in these three dimensions to create a ba, how ba – directly and indirectly through supporting new relations – fosters creativity, and how these factors occur in coworking spaces. Based on this theoretical body the following hypotheses can be formulated.

3.1. | Creativity & Ba

The theory of ba as a concept of a shared physical, mental, and virtual space that supports creativity by supporting the creation and free exchange of knowledge (see Nonaka/Konno 1998, p. 40) and the applicability of the ba concept to coworking spaces directly leads to the first hypothesis:

> *Hypothesis 1) Being member of a coworking space has a positive influence on self reported levels of creativity.*

The hypothesis states a direct influence of ba on personal creativity levels. This broad statement can be formulated in more detail.

Physical ba that supports creativity can be created through a shared space that is designed in a way that is stimulating and has a variety of work settings suitable for different types of tasks, individual and collaborative ones. The theory states that the level of creativity is dependent on the amount of loose variables, hence diverse stimuli in an environment (Mitchell McCoy/Evans 2002, Nicholson 1974). For the spatial structure the 'club' model (Duffy 1997) is promoting flexible settings that provide a changing environment everyday and different settings to choose from. Coworking spaces look like 'clubs' in reality on their structural level. They are open, have a lot of design-details and are flexible. Often they look like a patchwork of things instead of having a slick design hence communicate that they can be changed. These artifacts communicate and therefore foster the values of the coworking space community. Based on this theory two sub-hypotheses can be formulated:

> *Hypothesis 1-A) A space design that is stimulating and diverse has a positive influence on self reported levels of creativity.*

> *Hypothesis 1-B) A space design that is flexible and offers a variety of work settings which can be changed easily has a positive influence on self reported levels of creativity.*

The other factors of the physical space design, like support for individual work or meeting facilities will not have an influence on creativity. Working alone and concentrated can happen somewhere else as well (e.g. at home). It is not the reason why people work in the coworking space. They come because of the stimulants, both physical and mental (see below). Meetings and collaboration may have an influence on creativity but in that case the activity not the facility of the meeting room would have the influence.

Mental ba provides a shared set of values, beliefs and attitudes towards work and creativity. Needed shared values found in the theory are: appreciation of creativity, openness towards new ideas and diverse opinions, trust, willingness to share knowledge free of charge, openness towards new and diverse people, respect, and interest in spending time together. All these values relate to the individual as well as to the community. Another personal value important for creating ba is personal identification with these other shared values. The atmosphere in the coworking space is an expression of the shared ba that people can feel and observe in the behavior of others. The values are brought to life. Atmosphere is ba in action. If the atmosphere gives a strong feeling of ongoing vibrant communication, collaboration and creative processes people get infected and stimulated by this "buzz" and become more creative themselves. The same assumptions holds if community members care about creative new ideas by openly discuss them. From the set of values and their expression as work atmosphere in the shared mental ba of a coworking space two sub-hypotheses can be formulated:

> *Hypothesis 1-C) A buzzing work atmosphere of communication and collaboration in the coworking space has a positive influence on self reported levels of creativity.*

Hypothesis 1-D) A shared mindset of trustful open exchange of ideas and knowledge has a positive influence on self reported levels of creativity.

People that are described as being a valuable new contact can be hypothesized to have a direct influence on the creativity level. This is the case because they can provide new insight through their different mindset, because they relate and connect thoughts or products or services to new application possibilities, or simply because they provide honest feedback and are there to bounce ideas off. Also just to observe what others are working on and to discuss their work and interests directly broadens one's own horizon. It acts as an intellectual stimulant. All these factors are the reasons why people call other people a valuable new contact. Hence the following sub-hypothesis can be formulated:

Hypothesis 1-E) The number of new valuable contacts a member made through the coworking space has a positive influence on self reported levels of creativity.

3.2. | Emerging Relations & Ba

The definition of ba itself as a shared space for emerging relations by Nonaka & Konno (1998, p. 40) and the influence model derived from that definition (see image 2.01) show that ba works directly (Hyp. 1) on creativity but also indirectly through the triggered new contacts. Because of the applicability of the ba concept to coworking spaces the second hypothesis can be formulated:

Hypothesis 2) Being member of a coworking space has a positive influence on making new and valuable contacts.

This may sound like stating the obvious because joining a new group always results in new contacts. But the hypothesis relates to a direct influence of ba on emerging relations and this broad statement can be formulated in more detail.

Physical ba that supports new relations can be created through a shared space that is designed in a way that new encounters are likely by improving interaction, that it is accessible and that it has a variety of work settings suitable for collaborative tasks and spontaneous informal socialization. The theory suggests that also here the 'club' model (Duffy 1997) is right because it is promoting communication and spontaneous interaction and collaboration. As said, coworking spaces have a 'club' structure. They are open, have a lot of design-details and are flexible. Often they are rough and/or recycle lots of things. These artifacts communicate and therefore foster the cultural values of the coworking space community. Based on this theory two sub-hypotheses can be formulated:

Hypothesis 2-A) A space design that is stimulating and diverse has a positive influence on the number of new valuable contacts.

Hypothesis 2-B) A space design that is flexible and offers a variety of work settings which can be changed easily has a positive influence on the number of new valuable contacts.

As for Hyp. 1 the other factors of the physical space design, like support for individual work and meeting facilities will also not have an influence here. Working alone will not result in new contacts and formal meeting facilities support pre planned meetings that normally include people who already know each other.

Mental ba provides a shared set of values, beliefs and attitudes towards knowledge exchange and social interaction. According to the theory it is the basic and most important ba for connecting people because without it there is no shared mindset and no shared interests that could make people want to get in touch. A ba that fosters knowledge exchange which means fostering communication and collaboration makes such behavior a shared value of the community. The needed values are: trust, openness toward new and diverse people, willingness to freely exchange knowledge and interest in spending time together. If the atmosphere brings these values to life and gives a strong feeling of warmth, being welcome and ongoing informal interaction like eating together, it will have a positive influence on emerging relations. New people can connect to the atmosphere and the community easily if they like it and hence start and learn to share the ba. From this set of values and their expression as community atmosphere in the shared mental ba of a coworking space three sub-hypotheses can be formulated:

Hypothesis 2-C) An inviting and warm community atmosphere in the coworking space has a positive influence on the number of new valuable contacts.

Hypothesis 2-D) A shared mindset of trustful open exchange of ideas and knowledge has a positive influence on the number of new valuable contacts.

Hypothesis 2-E) A shared mindset of appreciating informal socializing has a positive influence on the number of new valuable contacts.

Virtual ba is a shared online platform dedicated to a community of shared interests. Networking does not only happen in the real world, it happens in virtual ba as well. Because the size of the community usually exceeds the number of available workspaces, members will not meet everyone in the space. Notably this is the case for people who spend only a little time in the space. Members can look for other members on the platform or engage in discussion. Hence the following sub-hypotheses can be formulated:

> *Hypothesis 2-F) The existence and intensity of use of a virtual communication and networking platform has a positive influence on the number of new valuable contacts.*

Quite obviously networking events and how many someone is attending can be assumed to have a positive influence on the number of new contacts. In the situation of coworking spaces this is true for two additional reasons related to ba. First the coworking space as a place serves as the arena for events. The physical ba is the place where these events can happen. A flexible space can house a broad variety of events and the community is a source for content worth sharing. In combination with the community's mental ba of open knowledge exchange the internal (though most of them are open for a broader public) events serve as a melting pot for new contacts. Hence the last sub-hypothesis can be formulated:

> *Hypothesis 2-G) The number of events hosted by the coworking space a member attends has a positive influence on the number of new valuable contacts.*

3.3. | Summary of Hypotheses

The development of the hypotheses showed that the two models of the influence of ba on creativity (Hyp. 1) and on emerging relations (Hyp. 2) are quite similar in their structure of sub-hypotheses. Furthermore Hyp. 2 is the model to describe the influences of ba on a variable that is itself hypothesized to be a predictor in the model around Hyp. 1. Hence ba is working on different levels.[33] Image 3.02 presents a graphical representation of the developed influence models:

[33] It can be assumed that ba is working on even more levels than the described two. For example the individual mindset towards socializing that is strongly correlated to the mental ba because people have to share this value will have a strong influence on how many events someone attends.

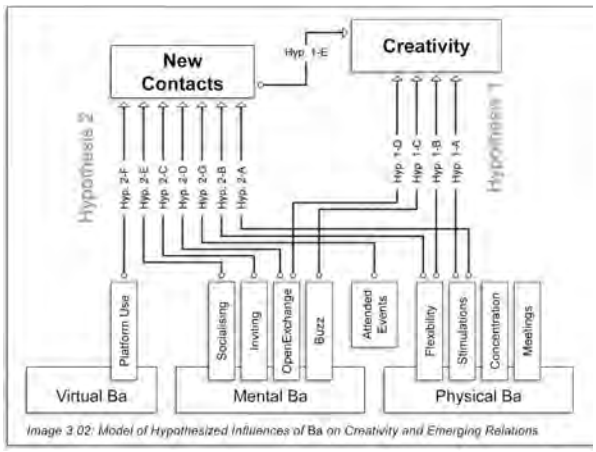

Image 3.02: Model of Hypothesized Influences of Ba on Creativity and Emerging Relations

Table 3.01: Summary of Hypotheses

Hyp. 1	Being member of a coworking space has a positive influence on self reported levels of creativity.	
Hyp. 1-A	A space design that is stimulating and diverse has a positive influence on self reported levels of creativity.	physical *ba*
Hyp. 1-B	A space design that is flexible and offers a variety of work settings which can be changed easily has a positive influence on self reported levels of creativity.	physical *ba*
Hyp. 1-C	A buzzing atmosphere of communication and collaboration in the coworking space has a positive influence on self reported levels of creativity.	mental *ba*
Hyp. 1-D	A shared mindset of trustful open exchange of ideas and knowledge has a positive influence on self reported levels of creativity.	mental *ba*
Hyp. 1-E	The number of new valuable contacts a member made through the coworking space has a positive influence on self reported levels of creativity.	

Hyp. 2	Being member of a coworking space has a positive influence on making new and valuable contacts.	
Hyp. 2-A	A space design that is stimulating and diverse has a positive influence on the number of new valuable contacts.	physical *ba*
Hyp. 2-B	A space design that is flexible and offers a variety of work settings which can be changed easily has a positive influence on the number of new valuable contacts.	physical *ba*
Hyp. 2-C	A warm and inviting atmosphere in the coworking space has a positive influence on the number of new valuable contacts.	mental *ba*
Hyp. 2-D	A shared mindset of trustful open exchange of ideas and knowledge has a positive influence on the number of new valuable contacts.	mental *ba*
Hyp. 2-E	A shared mindset of appreciating informal socializing has a positive influence on the number of new valuable contacts.	mental *ba*
Hyp. 2-F	The existence and intensity of use of a virtual communication and networking platform has a positive influence on the number of new valuable contacts.	virtual *ba*
Hyp. 2-G	The number of events hosted by the coworking space a member attends has a positive influence on the number of new valuable contacts.	physical & mental *ba*

4 | Methodology

4.1 | A Model for Assessing Ba

| Missing Pages

Pages 22-33 are not included in this document due to the plan to publish the results of this thesis. Please contact the author for further questions or the full text.

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6.3 | Limitations

The most basic limitation of this thesis is that the findings come from coworking spaces which are very different from traditional offices in their design but especially in their understanding and organization of work. The findings cannot easily be applied to other situations and organizations. Coworking spaces were intentionally chosen because they control for environmental variables like the influence of leadership style on creativity but in traditional organizations these variables need to be taken into account.

The power and quality of measuring the dependent variable creativity is also limited in this thesis. Self reported change in the level of creativity is not objective and the perceived change from a past stage can easily be biased by seeing the pre-coworking past more negative as it actually was in regards of creativity.

The whole research model with NEW_CONTACTS as an endogenous variable in the regressions on creativity is a weakness as well. The strength of the direct influences may not be clear. But still: it would have been the bigger weakness not to include this variable because other variables would show significant influence directly on creativity that does not exist.

Another limitation or flaw is the number of coworking spaces the participants belong to. To have only a few spaces instead of 51 in the study would have been better, so that the actual design of the spaces, their size and structure could have been taken into account and could have been compared. Now this is left for further research.

6.4 | Further Research

This thesis can only be seen as one step towards a better understanding of the real quantitative influences of workplace design on creativity (or other desired behavior) in the workplace. This field was basically neglected for a long time. More research is needed to test how space affects creative work, both in the field and in experiments. This would be interesting also for different personalities: space may have different effects on adaptor or innovator personalities (see Puccio et al. 2000). It may have different influence on individual or team creativity. Also it may have different influences in different stages of the creative process (for one approach see Martens 2011). This thesis only asked for self reported levels of creativity. A more objective measurement of the dependent variables, e.g. through a true consensual measurement of creativity with two people independently rating one's persons creativity, would strengthen the results

in further research. Also longitudinal research designs that measure creativity before and after a change in the workplace design or designs with a control group (for one approach see Senoo et al. 2007) would help to fine-tune the findings.
Some of the theories and constructs used here are not well investigated yet. Coworking is a rather new phenomenon. Not in terms of the digital revolution but in the time-spans academic research thinks in. Scientists just start to develop interest in this form of work organization.[56] More findings will shed more light on the movement, its values, successes and internal differences. Ba as philosophical and theoretical framework is quite well developed but more quantitative research with ba operationalized will help to understand what is going on in communities of (physical, mental or virtual) place and how environmental variables interrelate. The concept can have much power to explain why place is still important or even becomes more important again although technology freed work from the traditional office.

6.5 | Practical Implications

Even if the findings cannot directly be applied to more traditional organizations transfers of the concepts can be made. The simple implication is that the right workspace design, if embedded in a shared mental ba, can positively influence creativity. An organization that wants to do so should not leave design decisions to cost driven facility managers (Chan et al. 2007, p. 8) or to architects who are only concerned with impressive looks from the outside (Davis 1984, p. 280). The important learning is that the mental ba, the right culture and climate in an organization, is more important than the workplace design but if there is a match between mental and physical ba the design truly drives the dynamics (Nonaka/Konno 1998, p. 53) of knowledge creation by providing the place for intense interaction. A sense for a shared place that is owned by the community (=the workforce) and designed to serve their needs can create work facilitators instead of containers for work and is therefore one step in the creation of ba.

In coworking spaces the conditions – mental and physical ba – can be perfect for supporting creativity. Especially when they fit together and the space sings what the culture wants to say,[57] there is no cognitive dissonance (Festinger 1957). Managers need to keep this in mind. If they want to change their corporate culture in a direction so that it becomes a mental ba for creativity, the physical ba needs to follow as an artifact of the culture.

Furthermore the theory of loose parts which promotes open variables (Nicholson 1974), was supported by the findings of this study proving an influence of stimulants on creativity. Marlow (2011) describes a good coworking space as always unfinished. Companies tend to organize, control and order everything (Willke 2007, p. 22). Offices often look "perfect" and clean signaling that every change would "destroy" the picture. They are static. In order to foster creativity through workplace design companies must let go. They should allow that space users take ownership of the space and constantly adapt it to their needs. The workplace design theory suggests that a "club" design (Duffy 1997) will be the right point to start in terms of spatial structure (Davis 1984). For ba Nonaka et al. (2000, p. 25) add:

> "Ba should be 'energized' to give energy and quality to the [...] [creativity][58] process. For that, leaders have to supply necessary conditions such as autonomy, creative chaos, redundancy, requisite variety, love, care, trust, safety and commitment." (Nonaka et al. 2000, p. 25)

Thinking a little broader, the findings of this thesis, together with the growing coworking movement, have some more subtle implications as well. Work is changing but even more important, people are changing. The next generation in the workforce has new demands. They are digital natives and because they know what kind of workplace organization exists in coworking spaces or in companies like Google or Zappos they may start to ask for such working conditions. Florida (2002, p. 116) is calling this the "non-collar workplace" movement. Here the workplace design becomes important to attract creative employees and hence becomes a factor in employer branding.

7 | Conclusion

This thesis showed that the physical work environment has in fact a direct and an indirect potential to foster creativity. It also showed that this effect is highly interrelated with other environmental factors influencing creativity and that the ba concept is a very suitable framework to model and explain the influences all these variables of the shared environment have. Also a shared environment – may it be mental, physical, virtual or ideally a combination of these three – can be called a ba.
Knowledge workers and the creative class are already using different workspaces according to their current needs (Bene

[56] Some spaces which were contacted for this survey reported that they are approached quite often now with research requests.

[57] In free adaptation of the text line "let your balalaika sing what my guitar want's to say" from the Scorpions song "Wind of Change".

[58] The original citation said SECI instead of creativity. Because SECI is a framework (developed by Nonaka /Konno 1998) for the creation of different types of knowledge and this creation process involves creativity the terms can be used interchangeably without a bias for the meaning of the citation.

2009). The technological revolution made it possible. Some of them, mainly freelancers and entrepreneurs, choose coworking spaces as their ideal work environment. They are open and flexible and can therefore be the right place for very different people if they share a similar understanding of what work is today or can be. This thesis showed that coworking is an interesting (and fast growing) new approach towards work and its organization and that spaces are an interesting new type of place for this understanding of work and that they really hold their promises to be an inspiring creativity fostering environment.

The fundamental claim of Joseph Beuys (1985) "Kunst = Kapital" (art = capital)[59] and "Kapital ≠ Geld" (capital ff money) holds true. The fundamental human ability of being creative (=being an artist in Beuys' terms) is the one and only fundamental resource and power (=capital) needed and existing to make cultural and civilizing evolution for humankind happen (Harlan et al. 1976, p. 32; Csikszentmihalyi 1996, p. 7). It is the driving force behind everything. And with ongoing automatization (in itself a result of creative work) this ability comes more and more into focus as rise of the creative class (Florida 2002). Everything should be done to nurture this fragile ability. If the physical (interrelated with the mental) work environment, hence ba, has such powerful nurturing potential, as this thesis showed, we should start to pay more attention to it.

[59] Also "Kreativität = Vorksvermögen" Beuys cited in Stüttgen (1992, p.24).

| Appendix

Pages 37-52, appendix A, B, and C mentioned in the text are not included in this document. Please contact the author for further questions.

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