

## **CONSTANT DRIPPING WEARS AWAY THE STONE: LINKING DESIGN THINKING AND EFFECTUAL ACTION IN DESIGNING NEW VENTURES**

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### **Abstract**

In this paper we explore how to intertwine designers' work and problem solving approaches with effectuation. At a first glance, establishing effectuation as the overlap between an entrepreneurial spirit and a certain design mindset seems to be rather obvious. Taking a closer look, however, it calls for further research, in particular to clarify the applicability of such a concept. The goal of our research is therefore to explore how designers' work approaches and design thinking tools may support companies in designing their business in the early start-up phase. As playground for these investigations we use a third-party project, which strives for initiating, fostering and integrating design orientation and effectual action into the strategy process. Our project partners developed a series of workshops in which the participants get to know the underlying concepts and methods. As evaluation methodology we use semi-structured interviews. Our current results indicate that while a sustainable integration of this concept requires a clear presentation of the effectuation principles, ongoing exposure demonstrates the potential to change the future entrepreneurial behavior.

**Keywords:** Design management, Design process, Design practice

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## 1 INTRODUCTION

In this paper we explore how to intertwine designers' work and problem solving approaches with the concept and principles of effectuation. Hence, we follow the definition of Sarasvathy who states "Effectuation processes take a set of means as given and focus on selecting between possible effects that can be created with that set of means" (Sarasvathy 2001, p.245). At a first glance, establishing effectuation as the overlap between an entrepreneurial spirit and a certain design mindset seems to be rather obvious. Taking a closer look, however, it calls for further research, in particular to clarify the applicability of such a concept (Reymen 2010). Many start-up entrepreneurs do not have expertise in establishing a new venture and thus, do not represent what Sarasvathy would consider an expert entrepreneur (Sarasvathy 2001, Sarasvathy 2003). Therefore, we want to explore how designers' work approaches and design thinking tools might help companies in their early start-up phase. In particular, we want to investigate if design thinking tools could act as catalyzer promoting and contributing to effectual action. Our motivation is to expand the entrepreneurial scope of action and to integrate it as part of entrepreneurial behavior during the development of new businesses. We consider design (thinking) as the glue between an initial idea and the effort to create a new business in an uncertain world. Following Bolland and Collopy's statement, i.e. "What is needed in management practice and education today is the development of a design attitude, which goes beyond default solutions in creating new possibilities for the future" (Bolland and Collopy 2004, p.4), design is meant to go beyond (product) design and (product) aesthetics, describing a distinct way of how to approach the world (Matthews 2010). The ongoing discussions about design thinking and their often rather positive connotation, effectually describing it as the wondrous Trojan horse, and its application in innovation processes and value creation, generated interest in many large organizations (Jahnke 2009). Scholars as well as practitioners (Bolland and Collopy 2004, Martin 2009, Brown 2008) promote the message that with design thinking user-centred innovation and holistic product and service offerings are created (Thoring and Müller 2011). Large enterprises in particular hope to drive innovation and consequently generate growth by adopting design thinking principles. They embed design thinking into their corporate structure so as to become more design-driven and to improve their innovation capability (Brooke 2010). Traditionally regarded as an area of engineering and management (Jahnke 2009), it is applied for tackling ill-defined problems and situations (Matthew 2009). Potential correlations between entrepreneurship, design and creativity are, however, not explicitly explained (Matthews 2009), although both managers and designers claim to be creative and flexible and required to deal with uncertainty challenges (Ryman 2010). Approaching the creation of a new venture as a design problem seems therefore rather promising (Sarasvathy 2003).

We follow these research goals in connection with a third party project called *doga* ("Design Orientierte Gründungsarbeit" = design oriented start-up work /design oriented growth action). As part of this project designers and an effectuation specialist developed a series of workshops for unexperienced and "wannabe" entrepreneurs, which aim at letting participants experience designers' work practices and problem solving skills. This is combined with an introduction to the concept and principles of effectuation. Our task in the project is to evaluate these workshop events and provide purposeful and constructive feedback. As an evaluation method we use semi-structured interviews. First results indicate that while a sustainable integration of this concept requires a clear presentation of the effectuation principles, ongoing exposure does carry the potential to change the future entrepreneurial behavior.

## 2 EFFECTUATION AS A THEORY OF DESIGN

Entrepreneurs usually consider markets, market niches and their opportunities as something that is pre-specified. Consequently their actions and responses are explained based on the opportunities they recognize and how successful the firm is built upon them (Shane and Venkataranman 2000). The dominant premise is that a causal logic is applicable as predictive approach to reasoning (Sarasvathy et al. 2008). This principle represents the basis for thoughts applying "rigorous, continuously repeated analytical processes" (Martin 2010, p.38). Such reasoning strategies seem to create value. An elimination of bias, judgments and variations is aspired for making decisions (Martin 2010). This kind of rationality assumes (1) that given, well-specified goals can be defined; (2) that an understanding of past histories, trends and (well-understood) causes-effects-relations allows for predicting the future;

and (3) that a market represents the independent environment functions as institution which separates “the wheat from the chaff of decisions made by individuals and firms” (Sarasvathy 2003, p.206). In contrast to that, effectuation does not choose among given alternatives, but rather aims at creating and generating this environment itself: “By continuously and iteratively negotiating with those stakeholders who *actually* commit to particular elements of the design process, we make both new means and new goals possible and reshape reality as we go” (Sarasvathy 2004, p.525). In doing so, expert entrepreneurs discover, explore and assess undesired as well as desired qualities with a range of possible outcomes (Sarasvathy 2003). Based on Herbert Simon’s “Sciences of the Artificial” Sarasvathy (2003) presents four key ideas which show that effectuation is understood as a theory of design: (1) natural laws do not prescribe our designs, but limit them; (2) every opportunity should be taken to escape from prescription in design; (3) the sciences of the artificial are governed by locality and contingency; and (4) near-decomposability is an important part of sustainable designs (Sarasvathy 2004). Through connecting entrepreneurial and design processes, she argues “that effectuation is at heart a theory of design” (Sarasvathy 2004, p.524).

### **The Design Point of View**

Different schools of design already attempted to establish a standardized theoretical framework and definition of design across diverse communities and schools. Yet, those attempts failed (Ralph and Wand 2009). Nevertheless, the role of design evolved from a self-contained concept to an open and complex system involving social and communicative actions (Lindberg et al. 2010). Many research efforts aimed at investigating how designers work and solve problems. Here, the challenge for design-related research lies in the rather complex description and analysis of intuitive behavior, which is, even for designers, often difficult to explain (Lindberg et al. 2010). Entrepreneurial aspects are regarded as an inherent part of design, usually subsumed in illustrations that describe how to approach a problem (Acklin 2013). Designers are confronted with wicked problems – meaning that tasks are ill-defined and based on complex, incomplete, contradictory or changing information. Experienced entrepreneurs of tech companies such as Apple or others with a strong design-orientation do not begin with a clearly specified goal involving a causal rational problem-solving approach (Sarasvathy 2003). Design problems are often complex problems and have therefore usually no single right solution, but rather a range of different possibilities, making a cut-off necessary. They are characterized by competing and often contradicting drivers and scenarios in which multiple answers may be true (Thorpe and Gamman 2010). Any aspect of the world can be characterized as interactions between partially nested hierarchies within a complex system. It includes having multiple feed-back and feed-forward loops, which are synthesized (Farrell and Hooker 2013). Thus, this process moves between the improvement of an existing solution and the identification of a new way to frame the problem (Hargadon 2005). A prerequisite for this type of problem solving is therefore the ability to embrace a wide range of thoughts and knowledge in areas such as arts, technology and science (Rylander 2009). Hence, an understanding of the general design process and its elements helps determine the information that is necessary (Thoring and Müller 2011).

The following recurring phases of the design process have been empirically defined (Lindberg et al., 2008): (1) the illumination of the problem space: designers in the exploration space apply an intuitive (not fully verbalized) understanding, which is achieved through considering exemplary use cases or scenarios. An opposite approach is formulating general hypotheses as well as theories with respect to the problem; (2) the exploration of the solution space: various different ideas are explored by designers. This method represents the open and multidimensional character of the task; (3) the iterative alignment of the solution space: iteratively ideas are transferred into tangible representatives i.e. prototypes. Those initiate and foster the communication not only among the design team but also with users and employers, considering that they are in touch with the problem-relevant environment (Gerber and Carroll 2012).

Participative design methods and effectuation are assumed to correspond: effectuation starts from given possibilities, is iterative and interactive and creates new options (Reymen 2010).

Subsequently, the question remains to what extent the expertise of designers and their tools have to be intertwined with effectuation in order to trigger a measurable benefit for start-up entrepreneurs.

### **3 DESIGN THINKING AS CATALYSER FOR EFFECTUAL ACTION**

In the following we propose an approach for how design orientation and design thinking may help catalyze the principles of effectuation for fresh entrepreneurs. Those principles are: (1) bird in hand principle, (2) affordable loss principle, (3) lemonade principle, (4) crazy quilt principle, and (5) pilot in the plane principle (Sarasvathy et al. 2008, Thorpe and Gamman 2011).

#### **3.1 Bird in hand or enhancing the generation of ideas**

The bird in hand principle proposes that actors and designers, respectively, work with the means by hand and ask themselves what they can achieve (Thorpe and Gamman 2011). By doing this, the entrepreneur attempts to identify opportunities that derive from their means. There are a number of procedures, methods and tools, which support the identification of new opportunities and the generation of new ideas and concepts, e.g. “sense intent methods” or “explore concept mindsets methods” (Kumar 2013).

#### **3.2 The Affordable Loss Principle**

Whereas causal models aim at maximizing potential returns and lowering risks, effectuation “pre-determines how much loss is affordable and focuses on experimenting with as many strategies as possible with the given limited means” (Sarasvathy 2003, p.210). Options are expanded step-by-step. Resources should be committed in such a way that a “trying-again” is supported and encouraged (Thorpe and Gamman 2011). Realizing new ideas and asking “stupid” questions involves a certain risk. The way how designers explore the problem-space and design the problem-solving process may minimize the risk of a flawed solution: ideas are generated, analyzed and evaluated in an iterative way. An originally poor solution may be changed to one that is at least a workable one (Stempfle and Badke-Schaub 2002). Prototyping is seen as a means of enabling practitioners to reframe “failure as an opportunity for learning, fostering a sense of forward progress, and strengthening beliefs about creative ability” (Gerber and Carroll 2011, p.81). Whereas brainstorming might restrict people in terms of what are sensible and rational ideas, approaches like BadIdeas may serve as useful instrument to determine the affordable loss. This technique aims at creating dump or bad ideas at the beginning instead of working on “good ideas” (Dix et al. 2006).

#### **3.3 The Lemonade Principle**

The Lemonade principle aims at leveraging contingencies and reframing those as opportunities (Thorpe and Gamman 2011). Bad news as well as surprises are regarded as potential chances to create a new market. Designers (and expert entrepreneurs) are used to work within those limitations: “Even if the design agent had infinite time and resources, physical design is still constrained by the laws of physics, virtual design by the speed and memory of the computational environment, and conceptual design by the mental faculties of the design agent” (Ralph and Wand 2009, p.107).

#### **3.4 The Crazy Quilt Principle**

Whereas in strategy literature competition is part of the analyses, effectuation aims at building “partnerships through pre-commitments from stakeholders as a way to reduce and/or eliminate uncertainty and erect entry barriers” (Sarasvathy 2003, p.210). By establishing an effectual network through collaboration and partnerships with their stakeholders, entrepreneurs co-create a new artifact (a new product, venture or market). In recent years an integrated view on design is applied where players from different disciplines are involved (Beckmann and Barry 2007).

#### **3.5 The Pilot in the Plane Principle**

The pilot in the plane principle focuses on those actions which require hard decisions (Thorpe and Gamman 2011). It presumes a “collective agency at a meta-level of goal identification” (Thorpe and Gamman 2011, p.224). Focusing on activities within their means and consequently within their control, expert entrepreneurs assume that their actions will lead to the desired outcome (Reymen 2010). Like in design the outcome is ‘created’. Design is intentionally, not accidental (Ralph and Wand 2009). For designers, the parallel performance of creating a new thing and simultaneously its way to make it work represents a complex creative feat (Dorst 2011). New artifacts and consequently

new possibilities are created. Hence, design orientation includes the potential translation and development of new options (Matthews 2010). Looking at Krippendorff's definition of design we see that an outcome is created by making sense (of things): "The etymology of design goes back to the latin de+signare and means making something, distinguishing it by a sign, giving it significance, designating its relation to other things, owners, users, or gods. Based on this original meaning, one could say: design is making sense (of things)." (Krippendorff 1989, p.9). As one might say, the entrepreneur creates new sense making options.

#### **4 THE DOGA PROJECT**

We regard it as essential to apply and investigate these theoretical aspects of design found in the literature in a more practical setting i.e. through a third-party project called *doga* (Design Orientierte Gründungsarbeit = design oriented start-up work/design oriented growth action). The *doga* project focuses on early stage start-up companies aiming at the integration of design orientation on an entrepreneurial level where effectuation should act as the linking part. The goal is to investigate to what extent designers' problem solving skills and work practices may facilitate design as well as the effectuation orientation in start-up companies. A sustainable effect on strategy and product or service development is assumed, strengthening the competitive advantage of the participating companies (Note: an economic advantage in monetary terms is, however, not predictable). Entrepreneurs come from various sectors and trades, are between 30 and 50 years of age, and have different educational backgrounds. Male and female participants are represented in equal shares. One underlying premise of our work is that, due to the initially rather small size of start-up companies, their entrepreneurs or their entrepreneurial teams simultaneously represent both the general management as well as the design management function. Another aspect we assume is that the structures in such start-up companies are often not explicitly determined. Changes and adaptations may easily be implemented, without facing the problem of breaking long established organizational interrelations. To that effect, our project partners (i.e. a design firm and an effectuation expert) developed a number of workshops with the goal to change the entrepreneurial behavior of start-up companies and to initiate, foster and integrate design orientation into their strategy process.

The above mentioned workshops aim at (1) constructing a framework in which participants experience the significance of design; (2) conveying design methods and competencies in order to extend and improve effectual activities; (3) enhancing the awareness of design (thinking) as a strategic tool, and (4) explaining how to integrate design orientation into entrepreneurial behavior. In particular with the effectuation workshop the facilitators want to convey the concept and principles of effectuation. As a one day workshop it embraces lectures about the concept of effectuation, discussions and exercises on an individual level as well as in small groups between 2-3 participants.

#### **5 RESEARCH METHODOLOGY**

We consider action research an appropriate methodology for this type of evaluation. Practitioners, i.e. the designer and effectuation specialist, and researchers participate in the analysis, design and implementation processes of the workshops. This collaboration should create the necessary synergy between all involved parties. A continuous flow of feedback provides the critical input for discussions and consequently supports the improvement of single workshops. Findings are applied so as to solve real-world problems. In order to evaluate the described modules we initially use an interview-based feedback analysis. Evaluating and considering different tools for data collection, we found that semi-structured interviews, with their support for multiple realities (Stake 1995), are well suited for this type of exploration. The goal of this is to investigate the extent to what modules can help embed the principles of effectuation in participating start-up companies. The interviews are conducted one month after a workshop, so that a certain long-term impact can be explored. Each of them lasts approximately 25 minutes and, in order to avoid potential biases, they are all conducted by the same researcher. Sessions are recorded, transcribed and pre-analyzed. Later interviews will be coded and further investigated using the GABEK (GAnzheitliche BEwältigung von Komplexität i.e. holistic processing of complexity, <https://www.gabek.com/>) method (Zelger and Oberprantacher 2002).

## 6 CURRENT RESULTS

So far we have conducted and pre-analyzed six interviews. Based on these interviews we were able to derive a number of preliminary core aspects associated with the implementation of design orientation in start-up companies. Findings are listed below, supported by relevant statements from the interviewees. While the interview language was German we also provide an English translation/interpretation of the statements.

Aspect 1: “constant dripping wears away the stone”. Some participants perceived the overall impact as a result of several events they attended. Given the limited time available they rated the one-day long workshop as particularly critical to convey the desired skills. The future format of the workshop may therefore add an additional one-day session.

*“But it starts to be part of how you think and act. Therefore, this makes more the sum of such participations. If you are going once, then you will not have the big eye-opener. But if you go often and again and again you are faced with it and so you really set it in, then it starts to work.” (German original: „Sondern das beginnt Teil dessen zu werden, wie du denkst und handelst. Deswegen, das macht dann mehr die Summe von solchen Teilnahmen. Wenn Du einmal hingehst, ja. Dann wirst du nicht das große Aha-Erlebnis haben. Wenn Du aber oft hingehst und immer wieder damit konfrontiert wirst und es du dann auch wirklich einsetzt, dann beginnt es zu wirken.“)*

*So the question is whether this one day brings you forward. So it's just something else, if you participate in a six-month coaching and you are dealing with it one day a month over a period of 6 months. Or if you go to a day-long event.” (German original: „Also die Frage ist, ob der eine Tag Dich weiterbringt. Also es ist einfach was anderes, ob Du bei einem halbjährigen Coaching teilnimmst und du über 6 Monate einen Tag im Monat dich damit beschäftigst. Oder ob Du zu einer Tagesveranstaltung gehst.“)*

*“And probably it needs more time then. Yes. Perhaps a coaching group or a supervision group would be helpful, where to meet founders over a certain period of time with respect to such issues and participants also can work regularly at home on such themes. So I have the idea that people could take out more.” (German original: „Und braucht wahrscheinlich auch mehr Zeit dann. Ja. Da wäre vielleicht eine Coaching Gruppe oder eine Supervisionsgruppe sage ich jetzt mal, wo sich Gründerinnen treffen über einen gewissen Zeitraum an solchen Themen auch arbeiten, regelmäßig und dann auch zu Hause an solchen Themen arbeiten. So ich habe die Vorstellung, dass sich die Leute mehr rausnehmen könnten.“)*

Another attendee experienced it this way:

*“By means of this it was once again the opportunity for me to take a day out and to deal with founders. And that is also valuable for me in such events. Without passing judgment, whether the event is good or bad, but simply to go and say, ok I'm taking a day time to think about it.” (German original: „Von dem her, war es für mich wieder einmal die Gelegenheit, sich wieder einmal einen Tag rauszunehmen und sich mit Gründern zu beschäftigen. Und das ist gleichzeitig für mich das wertvolle an solchen Veranstaltungen und so. Ohne zu werten, ob die Veranstaltung gut ist oder schlecht, sondern einfach hinzugehen und zu sagen, ok ich nehme mir einen Tag lang Zeit darüber nachzudenken.“)*

Aspect 2: “viribus unitis – together we are strong”. Referring to the crazy quilt principle effectual action includes learning through collaboration. Getting together with people from different fields with different backgrounds is deemed a valuable and inspirational characteristic:

*“Of course you always meet people. In this case with a similar attitude, i.e. they also think about starting a business, like you and that is the reason why they are there, too ... Because of this, it was exciting for me. (German original: „Du triffst natürlich immer Leute. In dem Fall mit einer ähnlichen*

*Gesinnungshaltung, d.h. die machen sich auch Gedanken über Neugründungen, wie du und deswegen auch da sind... Von dem her war es für mich spannend.“)*

*So I think it's always nice when people are there who do something completely different. Because I come from the high-tech field; and then when people are there like “yes, I have wondered how to make a table in an innovative way; and I am not a carpenter, but somehow I want to bring that thing on the market or something completely different.” It was a pretty exciting combination. And they were all nice. That was fine.“ (German original: „Also ich finde das immer ganz nett, wenn Leute da sind, die komplett was anderes machen. Weil ich komme aus dem High-Tech-Bereich und wenn dann Leute da sind wie „ja ich habe mir neue Gedanken gemacht, ja irgendwie auf eine neue Art einen Tisch zu machen. Und ich bin zwar kein Schreiner, aber irgendwie will ich das Ding auf dem Markt bringen oder auch etwas ganz anderes.“ Das war eine ziemlich spannende Kombination. Und die waren alle nett. Das war fein.“)*

*...”it is that really concrete projects have unfolded for me. With one participant and another one. New contacts that are really important to me and which could result in collaboration, this alone has already paid off. It was fun. Most fun I had with the discussions afterwards.“ (German original: „...es ist, dass sich wirklich konkrete Projekte daraus ergeben haben für mich. Mit einem Teilnehmer und auch neue Kontakte, die für mich total wichtig sind. Wo sich auch noch was ergeben kann, von dem her allein hat es sich schon rentiert. Es hat Spaß gemacht. Am meisten Spaß gemacht haben mir die Gespräche danach.“)*

Aspect 3: “nothing to lose”. The principle of affordable loss seems to stick with people:

*“And what stuck mainly with me is that one focuses on the loss that one wants or can afford.” (German original: „Und vor allem was bei mir hängen geblieben ist, auch, dass man sich auf den Verlust, den man sich leisten will oder kann, dass man sich darauf konzentriert.“)*

*“The affordable loss, that is, what got stuck. Only the word I just couldn’t remember. That’s right, that’s a concept, that’s cool.“ (German original: „Der leistbare Verlust, der ist mir so hängengeblieben. Nur das Wort ist mir erst nicht eingefallen. Das stimmt, das ist ein Konzept, das ist cool.“)*

*“I like the topic of affordable loss. That was the only thing, that I had instantly and without support in my mind.” (German original: „Mir gefällt der Themenbereich des leistbaren Verlustes gut. Das war auch das einzige, was ich auch ungestützt sofort wieder in Erinnerung gehabt hatte.“)*

Aspect 4: “sharing is caring”. Start-up entrepreneurs would invite their (future) employees to also apply these principles:

*“Or things like that there are explicitly employees who have skills that can be used somewhere else. And I go to these things too. There are those employees with such skills. For example, there is a lady with us ... and she is incredibly creative. She builds cakes and stuff tinkering and fiddling. And that has at least as result that we had a conversation for 10 minutes and we said, “Do you not have any idea where you can apply your creativity or that you can do something with it.” Yes, she just thinks about it. So, maybe someday something comes out, maybe not. The impulse is there. And from this point of view, it was possible to again take in something fresh.” (German original: „Oder solche Sachen wie, dass es explizit Mitarbeiter gibt, die Fähigkeiten haben, die man anderweitig verwenden kann. Und ich gehe diese Sachen auch an. Es gibt solche Mitarbeiter mit Fähigkeiten. Wie zum Beispiel es gibt bei uns eine Dame...und die ist aber unheimlich kreativ. Die baut Kuchen und Zeugs und Glump und bastelt und alles Mögliche. Und das hat zumindest dazu geführt, dass wir ein 10minütiges Gespräch geführt haben und wir gesagt haben, „Du, hast Du nicht irgendeine Idee, wo Du Deine Kreativität einsetzen kannst oder irgendwas damit machen kannst.“ Ja, sie denkt mal darüber nach. Also, vielleicht kommt irgendwann mal was raus, vielleicht auch nicht. Der Impuls ist da. Und von dem her ist, war es möglich, wieder etwas Frisches mithereinzunehmen.“)*

*“That's actually something that I can use and in an enterprises you can also transfer it to the staff, encouraging the employees to consider what they could do in their field of responsibility with these possibilities. (German original: „Das ist eigentlich das, was ich da einsetzen kann und im Betrieb kann man das natürlich auch auf die Mitarbeiter übertragen, die Mitarbeiter dazu anregen oder zu animieren, dass sie selber einmal überlegen, wie sie in ihrem Bereich mit den Möglichkeiten anfangen könnten.“)*

Aspect 5: “theory is the mother of practice”. Some participants perceived the workshop as too theoretical and out of touch with reality. As mentioned above one reason lies in the rather tight schedule of the workshop restricting it to a rather theoretical presentation of its concept.

*“So, it would have made more sense to work with the people in a closer connection to their reality. And what these principles mean for their reality.“ (German original: „...also, wo es sinnvoller gewesen wäre mit den Leuten näher an ihrer Realität zu arbeiten. Und was heißen die Prinzipien für ihre Realität.“)*

*“It was too theoretical for me, by far. It is interesting when you know that has been developed by an Indian woman. That's all ok. But I think, that Buddha quotes, etc. at the beginning one could actually leave out. (German original: „Es war für mich bei weitem zu theoretisch. Es ist zwar interessant, wenn man weiß, dass das von einer Inderin entwickelt worden ist. Das ist alles ok. Aber ich glaube, also Buddha Zitate usw. kommen da vor, am Anfang. Das könnte man sich eigentlich sparen.“)*

*“I think you don't take away any practical methods. Because the exercises they have tried to convey, were not for me, let's say it this way. But I guess I was not the only one who had this opinion, ...” (German original: „Ich glaube, praktische Methoden nimmst Du Dir keine mit. Weil die Übungen, die sie versucht haben zu vermitteln waren eher, ja, war nicht das Meinige, sagen wir mal so. Aber ich glaube, ich war mit dieser Meinung nicht der einzige,...“)*

Aspect 6: “the solution to the puzzle”. An interviewee, who attended all so far offered workshops, summarizes his experiences as follows:

*So for me that was before, I have to say, everything a gut feeling. This has changed through the jam in the sense that I can really flesh it out now. I can really go through point by point and can tell, tell by the gut feeling, this is what I like. Then I can check it: does it fit to my skills, to my opportunities to what I'm doing. ... I think the two (Note: dogma jam and effectuation jam) are connected to each other. It was first the design thinking jam which has helped me a lot in this direction. But the effectuation jam concretized this direction. It has focused exactly to a point. ... That there are really exact steps that you can follow in order to reach your goal. (German original: „Also für mich, war das, muss ich sagen alles vorher ein Bauchgefühl. Das hat sich durch den Jam in der Richtung verändert, dass ich es jetzt wirklich konkretisieren kann. Ich kann wirklich Punkt für Punkt durchgehen und kann sagen, vom Bauchgefühl her sagen, das würde mir liegen. Dann sage ich, kann ich es überprüfen. Passt das überhaupt, passen überhaupt meine Fähigkeiten, meine Möglichkeiten dazu... Das ich was draus mache. Ich glaube die beiden (Anmerkung: dogma jam und Effectuation Jam) sind sehr miteinander verbunden. Es war beim ersten Jam Design Thinking, das hat mir auch schon sehr viel gebracht in diese Richtung. Aber der Effectuation Jam hat es noch mal konkretisiert in diese Richtung. Genau auf den Punkt gebracht. ... Das es wirklich genaue Schritte gibt, die man nachvollziehen kann, damit man ans Ziel kommt.“)*

## **7 NEXT STEPS**

The above-mentioned aspects represent the first insights of how designers' work and problem solving approaches and design thinking may contribute to the creation of a new venture. Additional interviews will take place in the next couple of weeks before a more in-depth analysis of the collected data will start. Findings are then presented to the collaborating designers and the effectuation specialist who aim at improving their workshop concepts. The feedback is incorporated into the preparations for the next

effectuation workshop. Afterwards participants are interviewed in order to explore if an improvement has been attained.

## 8 CONCLUSION

So far our results indicate that the inclusion of design thinking and effectuation principles during the initiation and early working phases of a new venture can help unexperienced entrepreneurs reflect their decisions and explore alternative paths. Collaboration with people coming from various professions and branches seems to particularly support and leverage the development of new businesses. We see that at least the one-day workshop is necessary to present the concepts and principles of effectuation. But this is not enough (time) for the participants to explore and understand to what extent and how this knowledge may contribute to everyday problem solving processes. Interestingly, fresh entrepreneurs invite their employees and/or project partners to also apply the principles of effectuation. Receiving feedback from participants with different backgrounds, we are still not clear about the amount of input that is necessary to convey the desired content.

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## REFERENCES

- Acklin, C. (2013) Design Management Absorption Model: A Framework to Describe and Measure the Absorption Process of Design Knowledge by SMEs with Little or no Prior Design Experience. *Creativity and Innovation Management*, 22(2), pp.147-160.
- Beckmann, S. L. and Barry, M. (2007) Innovation as a learning process: embedding design thinking. *California Management Review*, Vol. 50 (1), pp.24-56.
- Boland, R. and Collopy, F. (2004) *Managing as Designing*. Stanford University Press Stanford.
- Brooke, M. D. (2010) Creativity & Innovation in Business 2010. Teaching the Application of Design Thinking to Business. *Procedia Social and Behavioral Sciences* 2, pp.6540–6546.
- Brown, T. (2008) Design Thinking. *Harvard Business Review* June 2008.
- Clark, K. and Smith, R. (2008) Unleashing the power of design thinking. *Design Management Review*; Summer 2008; 19(3), p.8-15.
- Dix, A., Ormerod, T., Twidale, M., Sas, C., Gomes, d. S., McKnight, L. (2006) Why bad ideas are a good idea. in *Proceedings of HCIEd. 2006-1 inventivity*, 23-24 March 2006, Ballina/Killaloe, Ireland.
- Dorst, K. (2011) The core of ‘design thinking’ and its application. *Design Studies* 32, pp.521-532.
- Farrell, R. and Hooker, Cl. (2013) Design, science and wicked problems. *Design Studies* 34, pp.681-705.
- Gerber, E. and Carroll, M. (2012) The psychological experience of prototyping. *Design Studies* 33, pp.64-84.
- Hargadon, A. (2005) Leading with vision – the design of new ventures. *Design Management Review*, Winter 2005, 16(1), pp.33-39.
- Jahnke, M. (2009) Design thinking as enabler of innovation in engineering organizations. 8th European Academy Of Design Conference - 1st, 2nd & 3rd April 2009, The Robert Gordon University, Aberdeen, Scotland.
- Krippendorff, K. (1989) On the essential contexts of artifacts or on the proposition that “design is making sense (of things).” *Design Issues* 5 (2), pp.9–38.
- Kumar, V. (2013) 101 Design Methods: A Structured Approach for Driving Innovation in Your Organization. John Wiley & Sons.
- Lindberg, T., Noweski, Chr. and Meinel, Chr. (2010) Evolving discourses on design thinking: how design cognition inspires meta-disciplinary creative collaboration. *Technoetic Arts: A Journal of Speculative Research*, 8 (1), pp.31-38.
- Martin, R. (2009) *The Design of Business – Why design thinking is the next competitive advantage*. Harvard Business Press 2009.
- Martin, R. (2010) Design thinking: achieving insights via the “knowledge funnel”. *Strategy & Leadership*, 38(2), pp.37-41.
- Matthews, J.H. (2009) Creativity, design and entrepreneurship: management education and development for innovation. In Solomon, G. (Ed.) *Proceedings of the 2009 Academy of Management Annual Meeting: Green Management Matters*, Academy of Management, Hyatt Regency Chicago, Chicago, Illinois.

- Matthews, J.H. (2010) Investigating design, creativity and entrepreneurial processes. In: Annual Meeting of the Academy of Management - Dare to Care: Passion and Compassion in Management Practice & Research, 6–10 August 2010, Montreal, Canada.
- Ralph, p. and Wand, Y. (2009) A Proposal for a Formal Definition of the Design Concept in K. Lyytinen et al. (Eds.): Design Requirements Workshop, LNBIP 14, pp. 103–136.
- Rylander, A. (2009) Design Thinking as Knowledge Work - Epistemological foundations and practical implications. *Design Management Journal*, 4(1), pp. 7-19.
- Ravasi, D. and Stigliani, I. (2012) Product Design: a Review and Research Agenda for Management Studies. *International Journal of Management Reviews*, 14(4), pp.464-488.
- Reymen, I.M.M.J. (2010) Design for new business development: using an effectual approach? Proceedings of Convergence: Managing + Designing Conference, June 18-19, 2010, Cleveland, USA, Cleveland: Case Western Reserve University.
- Sarasvathy, S. D. (2001) Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review*, 24(3), 244-288.
- Sarasvathy, S. D. (2003) Entrepreneurship as a science of the artificial. *Journal of Economic Psychology* 24, pp.203–220.
- Sarasvathy, S. D. (2004) Making it Happen: Beyond theories of the firm to theories of design. *Entrepreneurship Theory and Practice*, Winter 2004, pp.519 -531.
- Sarasvathy, S.D., Dew, N., Read, S., Wiltbank, R. (2008) Designing Organizations that Design Environments: Lessons from Entrepreneurial Expertise. *Organization Studies* 29(03), pp.331–350.
- Shane, S. and Venkataraman, S. (2000) The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25(1), pp.217-226.
- Stempfle, J. and Badke-Schaub, P. (2002) Thinking in design teams – an analysis of team communication. *Design Studies*, 23 (02), pp.473–496.
- Thoring, K. and Müller, R. (2011) Understanding Design Thinking: a process model based on method engineering. *International Conference on Engineering and Product Design Education*, 8 & 9 September 2011, City University, London, UK.
- Thorpe, A. and Gamman, L. (2011) Design with society: why socially responsive design is good enough. *CoDesign* Vol. 7, Nos. 3-4, pp.217-30.
- Zelger, J. and Oberprantacher, A. (2002) Processing of Verbal Data and Knowledge Representation by GABEK®-WinRelan®. *Forum: Qualitative Social Research* May 2002.