‘One Over, One Under’: a dialogue between design and craft

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Focusing on a process where the designer embeds herself in craftspeople’s workshops with the intention of ‘learning from inside’ and ‘making together’; this paper proposes pathways for considering collaboration within design. ‘One Over, One Under’ as the title of the mentioned project suggests, points to the tensions that make weaving possible, also acting as an analogy to collaboration between designers and craftspeople. The project proposes a mode of working and a spectrum of outcomes where the designer has a first-hand experience of production techniques, engages in a serious and continuous dialogue through making, and develops an intervention that also brings forth her own skill set (such as introducing digital manufacturing and structural variations), transforming the conventions and boundaries between established roles and manufacturing techniques. An experiment that resulted in a series of objects considering both the technologies of production and the input of the designer, this process not only increases the potentials that crafts hold for the field of design, but it also offers possibilities of collaboration and further articulation of the design act.

basket weaving, 3D printing, learning from inside, crafts and design

1 Introduction
Understanding how craftspeople work, their personal relationship with materials and the act of making could lead to new perspectives both for designers and the discipline of design. In order to discover the new possibilities that could arise from the collaboration between the designer and the crafts-person, in this paper, we present the project ‘One Over, One Under’, realised in cooperation with the basket-weavers of Sapanca and Hüsna Budak, a student of the Industrial Design Department at Istanbul Bilgi University, where we, the authors of this paper, were the course leaders.

Through discovering the possibilities that could emerge from the collaboration between the craftsperson and the designer, ‘One Over, One Under’ aims to intervene into the traditional process of basket weaving via utilising methods of digital manufacturing (Figure 1). The process is shaped by
a collective activation of the distinct knowledge and skill sets that each party holds. The project offers a position through clashing the craftspeople’s traditional methods of making and the new technologies that the designer is proficient in.

As part of the ID 402 Graduation Projects course of İstanbul Bilgi University University’s Department of Industrial Design, students work on a project within a self-defined context, with the supervision of the course leaders, and in close contact with a professional or an academic ‘mentor’ competent in the subject matter. In examining the project that developed through this process, we develop our propositions through the visual and written reports prepared by the student and our own observations during our meetings with the student throughout the project as course leaders.

Focusing on the ‘One Over, One Under’ project as an example, our aim is to draw attention to the pathways that develop both for designers and for craftspeople through the act of ‘making-together’. Therefore, we first attempt at understanding the nature of weaving and talk about the history of basket weaving in Turkey and its place in local production today. We then discuss the nature of the craft and the way it interacts with the designer through the process of collaboration. As a result, we present further possibilities of production for basketry, weaving and design but more importantly, we aim to demonstrate a working method between the designer and the producer, one that is dialogic and visible in being so; aimed at co-producing, where the forces from both sides are mutually present in the outcome.

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1 All photographs used in this paper were shot by Hüsna Budak during the course of the project.
2 Gülname Turan was the mentor who contributed to this project.
2 Basket Weaving

2.1 On Weaving

Basket weaving, which is argued to have emerged by taking birds’ nests as examples, is one of the oldest artisanal techniques known (Zoran 2013; Neziroğlu 2007). Unlike crafts such as woodworking, pottery or blacksmithing, weaving is not restricted by the raw materials used. It has become a highly flexible method of craft by accumulating various materials and different techniques of production. Throughout history, various uses, materials and applications with differing sizes are encountered. People have used woven products for carrying, storing, house building, measuring, and with symbolic purposes at religious and funerary ceremonies (Zoran 2013; Neziroğlu 2007).

Due to its diversity and the central role it has played in various cultures throughout the years, weaving is a field that is open to several different readings. Ingold (2000) proposes that the nature of weaving has a rhythm arising from the tension between reciprocal forces. In addition to the diversity of materials used, basket weaving is shaped by both the forces that the fiber materials exert on each other and the muscular dialogue with its producer during weaving. Basketry also sustains its existence through this reciprocity between different sources of force. So much so that Plato, in his dialogue titled “Statesman”, uses basketry as a structural metaphor, for weaving the state through governance and justice, being reciprocal forces (Danto, 2012, p.207).

These forces and the tension are present both between the craftsperson and the material, as well as the horizontal and vertical elements that form the basket. In weaving, while the craftsperson applies a force on the material to shape the stakes and interweave them through one another, the elements that make the basket also continuously apply forces on each other, becoming tighter and building the form. Thus, the activity of weaving is a continuous process of to and fro between different actors (Ingold, 2000). Ingold (2000) further underlines a difference between making and weaving, and states that while making comes to an end with a final form, weaving is a process that is constantly in motion and that lasts a lifetime, “punctuated but not terminated by the appearance of the pieces that it successively brings into being” (Ingold, 2000, p.348). The weaving of a basket is not the concretised form of a preconceived idea in the mind of the craftsperson; instead, it emerges as a product of the active and sensuous engagement and the force field generated between the craftsperson and the material in the weaving process. The craft is a pattern formed by the rhythmic and repetitive movements of these reciprocal forces. Therefore, basket weaving involves no automation, and it is a process of development that requires constant attention and the instantaneous decisions of the skilled craftsperson (Ingold, 2000).

The ‘One Over, One Under’ project adds a new ingredient to this “field of forces” (Ingold, 2000, p.345), which is the dialogue established between the craftsperson and the designer. Before we start talking about the project, we shall look at the place of basketry in Turkey to better understand basket weaving and the current conditions of this craft.

2.2 Basket Weaving in Turkey

Through archaeological excavations, we know that it is possible to come across traces of basketry from the earliest periods onwards in various parts of the World. Contemporaneous with different regions throughout the world, traces of early basket weaving techniques found in Anatolia go as far back as 10,000 years. The earliest examples of basketry uncovered in archaeological excavations belong to the Neolithic period, and we come across a wide array of different techniques and materials that change according to the place of production throughout Anatolia (for example, findings from Çatalhöyük excavations indicate that weaving had a central role in the daily life of that period) (Neziroğlu, 2007). A variety of products with many different functions, to be used in areas such as agriculture, storage, measurement and transportation, were produced by weaving. In addition to the common basket, a wide variety of products such as “fish traps and pots, bird cages, weighing pans for balance scales, saddlebags, prayer mats, hats, umbrellas” (Neziroğlu, 2007, p.53) have taken their place in daily life.
Today, however, production capacity is getting smaller day by day, compared to the variety it had back in the past. We could see basket weaving still present mainly at “Konya, Kastamonu, Kocaeli, Trabzon, Rize, Edirne, Kırklareli” (Neziroğlu, 2007, p.53) today. Although the raw material used in these places varies according to local vegetation, we still come across similar techniques in terms of weaving. The most common production process involves an initial stage of softening the collected material by soaking it in water, followed by cutting it to length according to the size of the basket that will be produced, forming a central base by horizontally arranging these stakes in the form of a cross, and then weaving the horizontal elements one over, one under (hence the title of the project) through the vertical stakes standing upright from the central base (Neziroğlu, 2007).

Figure 2. Weaving of the base

2.3 Basket Weaving in Sapanca

During ‘One Over, One Under’, our student Hüsna worked with the basket weavers in Sapanca, one of the main sites of local basket production. There exists limited sources of information about basket weaving in Turkey, and especially less regarding the practice today. There are no detailed research on techniques and master craftspeople, even about the regions such as Karamürsel and Aydın, where basketry is promoted as a touristic value. Due to this lack of reference material, the information about basket weaving in Sapanca had to be gathered first hand, during the weekly visits of the designer to the weavers’ workshops. In addition to learning the techniques of weaving, she also gathered information about factors that surround production, like procuring raw materials, everyday lives, and sales networks of craftspeople.

Sapanca is one of the regions where basketry still remains as a fundamental source of livelihood. The area is rich in raw materials used in basketry (such as willow, wicker, cane and reed) due to its climate and flora. While some craftspeople permanently reside in Sapanca, others migrate to Sapanca seasonally from nearby regions, following the flourishing of the plants, and spend winter months here, weaving baskets. The most common raw material is wicker, which they collect from the forests and trim, for preparation. It is also possible to obtain cut and trimmed raw materials from the market places in Sapanca. However, instead of buying, most of the craftspeople our student Hüsna has spoken to prefer to forage the raw materials themselves in order to reduce costs. A lot of the craftspeople in Sapanca also prefer the above-mentioned most common technique of weaving in Turkey; ‘one over, one under’. The baskets are generally produced as vessels to be used in carrying various kinds of goods (Figure 3).

During the project, Hüsna worked with four different master craftspeople in Sapanca and paid weekly visits to their workshops, where they were also dwelling, and she weaved baskets with them. Masters Erol and Nurdan are married, and they are seasonal labourers normally residing at Biga in Çanakkale, and coming to Sapanca during winter months to collect raw materials and to weave baskets. Hüsna first started working with Masters Erol and Nurdan (Figure 4) and learned the basics of basket weaving from them. Later on, she met and work with the siblings Masters Sabahattin and Pembe (Figure 4), and she tried to acquaint herself with the unique and individual relationship each one of them has with weaving. From the middle of the project onwards, she continued working with Master Pembe, with whom she could communicate the best. Master Pembe’s habits in weaving were open to try new forms, she had an attitude that enabled her to share Hüsna’s excitement and participate in forming ideas.
The craftspeople usually collect their materials from Akyazı, the nearest forest. After cutting and trimming the sticks they have collected, they split each stick into three strands and get these ready to be woven. As it is a very difficult task to split a stick into three by hand, Masters Erol and Nurdan have designed a tool especially for this purpose, that they call ‘the juniper’ (Figure 5), which they have produced from juniper tree. With this tool they could easily split the sticks into three equal strands. Masters Pembe and Sabahattin, on the other hand, were cutting slits in the upper part of the sticks with the help of a knife, and then splitting the sticks into three strands by hand.
All four masters that Hüsna worked with were fundamentally using similar basket weaving techniques. They were using stake and strand technique (Neziroğlu, 2007) on the main body. In the stake and strand technique, after the base is woven, sticks are added perpendicular to the base. These vertical elements remain stable during the weaving process and also assume the role of the main skeleton. The horizontal elements are woven, intertwining the vertical elements layer upon layer and lock one another in place to form the body. After the body is completed, additional elements such as handle, lid and border (Figure 6) could be added.

3 An Unexpected Encounter

3.1 Crafts Learning

Hüsna, as an industrial design student, has obtained knowledge on mass production methods and on recent technological means of production, such as the ability to use 3D modelling programs, and is accustomed to utilizing this know-how in developing forms that embody her ideas. Craft, on the other hand is a way of making things via thinking and sensing through hands so much so that making becomes an intellectual process (Sennett, 2008). With her material engagement, craftsperson thinks through her hands and convey her knowledge through material experiences. Since knowledge of the craft is not necessarily available with words and instructions, it requires material performances to reveal knowledge (Nimkulrat, 2012). Similarly, some part of the designer’s knowledge is embedded in her practice and it can only be disclosed through design activities (Cross, 2001) such as, sketching, modelling and later embodied in the artefact. To further contextualize design education in Turkey, it is important to emphasize that during the historical formation of Industrial Design departments, there has been very limited attention given to crafts and small-scale production (İngin & Altay, 2014). Thus the profession (or field), by way curricular discourse has either undermined or disregarded an essential mode of product-making.

Sharing knowledge through making together, the ‘One Over, One Under’ project aims to intervene traditional basket weaving through the use of design knowledge and skill-set with current means of production. It involves an enquiry into the opportunities of collaboration that could be achieved between the craftsperson and the designer. In order to establish this dialogue and collaboration, the designer weaved herself within the workshop of the craftsperson, where craft knowledge, i.e. the embodiment of skills and relations with materials were unveiled.
The methods that the craftspeople demonstrate at their workshops guide the apprentice in learning the craft through practice (Sennett, 2008). Crafts involve tacit sets of information that could not be transmitted in any way other than practice. This situation creates a “communication gap” (Schön, 1987, p.101) between master and apprentice, where talking seems futile, and only making together could help bridge this gap. In fact, during the act of making the master reveals a lot more than she actually could say or was even aware of. By making together (which includes observing and emulating), the master could teach more than she explicitly knows, and the apprentice learns much more than she can explicitly claim to understand (Kaya 2011; Polanyi 1966). In İngin and Altay’s studies about the craftsperson-apprentice relation in the context of design education, it is emphasized the benefits of a designer (student) entering the craftsperson’s realm of production and having a first-hand experience of the work would yield both a profound understanding of techniques, and a sense of responsibility towards the producer (İngin & Altay, 2014).

Polanyi defines tacit knowledge as personal knowledge that is internalized so deeply that it is “ineffable” (1962, p.88); that it cannot be expressed in words. It can only be acquired through making (Kaya, 2011; Rust, 2004). According to Sennett, in acquiring a skill, the individual constantly repeats and follows a series of procedures, and so builds her own method of making. Following a routine so internalized through repetition, the work proceeds “instinctively” (Sennett, 2008, p.50), without having to think about it. All the knowledge and experience acquired to fulfil this skill is then transformed into tacit knowledge within the process. Performing a sophisticated skill, like gaining mastery in a craft, functions as a set of practices interwoven between tacit knowledge and explicit critique (Sennett, 2008). Thus, practicing a craft arise from the unspoken dialogue between the explicit awareness of the master and tacit knowledge acquired from repetitive experiences. Although the craftsperson knows how to perform her craft to the finest detail, because of the silent nature of this knowing she cannot be sure how to put her knowledge into words/instructions (Nimkulrat, 2012; Wood, Rust & Horne, 2009; Sennett 2008). Hence, to be able to learn a craft from a craftsperson it would be necessary to observe the act of making within which this silent dialogue is embodied, and work along to be able to recognize the “decisive moments” (Sennett, 2008, p.95) within practice. Due to the nature of tacit knowledge, which only becomes accessible through making, this knowledge could only be acquired through “a discussion grounded in a context of practical activity” (Ingold, 2013, p.9).

By means of the weekly visits to the workshops throughout the project, Hüsna was able to create that “grounded discussion” with the craftspeople. She aimed at grasping the tacit knowledge of basket weavers through “learning from inside”; not just by talking, nor by observing alone, but by “doing together and thinking through observation” (Ingold, 2013, p.11). Here we would like to emphasize that the places where this relationship could be formed were also workshops where the activity (that is, the craft) was shaped in the form of a dialogue. Workshops have been places where “learning becomes local” (Sennett, 2008, p.178). The weekly visits to the workshops and the weaving experiments jointly carried out by the designer and the craftsperson on these visits formed the basic structure of the ‘One Over, One Under’ project.

### 3.2 ‘One Over, One Under’: A Dialogic Process between Designer and Craftsperson

Hüsna made weekly visits to the masters’ workshops to intervene into a traditional method of production by establishing a dialogue between the different skill sets of the designer and the craftsperson, and to be able to understand the craftsperson’s relationship with the materials and the act of weaving, which could only be acquired through making together (Figure7). Hüsna observed through weaving, and was able to establish a common ground for discussion through the baskets they had weaved together. The excerpts included here are taken from Hüsna’s study notes and reports:

*I found the opportunity to weave a basket together with Master Erol at the workshop. He taught me the basic method of weaving, which is the weaving technique used in almost every*
basket, on a basket that he had started when I was away. When it was finished he gave the basket to me as a gift, saying that we made it together. (Hüsna Budak, 2015 project report)

Instead of starting with a specific idea or a preconceived final product, the project was initiated as a process of enquiry and an investigation aiming to establish a collaboration between the designer and the craftsperson. And at each step, it proceeded as a process of growth/development that embraced new discoveries that would emerge from this collaboration with the craftsperson. As Hüsna became acquainted with the practice of weaving and managed to establish a relationship of mutual trust with the craftsperson, she began to form her own ideas, to share them with the craftsperson, and to discuss these, again, through practice. They tried to see the possibilities, the pros and cons of new ideas through weaving together, and together criticised how different interventions related to basketry:

To improve our communication with Masters Sabahattin and Pembe I asked them to weave something different than what they are accustomed to. I asked Master Sabahattin to weave a basket with a base that has three centres, and Master Pembe to weave a spherical shell. Master Pembe told me that she needed a mould to be able to do this, so I gave her a metal bowl. (Hüsna Budak, 2015 project report)

During the project, in addition to the examples depicted in photographs they carried out various other experiments together, and each one of these experiments was essential in establishing a common ground (Figure 8). These experimentations involve actions that help establish communication and confidence between the designer and the craftsperson by enabling a discussion within a context of practical activity. In addition, these experiments that are carried out together also function as a means to acquire tacit knowledge embedded in the practice of the craft. As mentioned earlier, the knowledge regarding the craft exist tacitly, internalized through its own practices, and it is not possible to access it through verbal spoken instructions (Nimkulrat, 2012; Sennett, 2008). Similarly, the design discipline too is a practice-based field, in which a certain portion of the knowledge of design is inherent in the act of designing, and could only be observed when
revealed through various activities within the design process (Cross, 2001). By means of investigation of knowledge through practice, the designer plans her each following step by evaluating her knowledge that becomes observable through action, and by learning from it (Tung, 2012; Schön, 1983). Therefore, the designer does not follow a predetermined route or a systematic method within the design process, but establishes her own path for each project within the necessities of the design process (Visser, 2006; Schön, 1983). Design becomes a process where the practitioner reflects on each step and plans each following step accordingly, albeit in a nonlinear fashion, often constituting a route through experience (Schön, 1983). That being the case, in the ‘One Over, One Under’ project, design and craft evolve by learning from one another -through multiple repetitive experiments made together- and meet again and again on the common ground of discussion through making.

Within these innumerable experiments there were moments of leaps forward: realisations that helped the project to proceed to the next level. One of the most significant of these was the realisation, arrived at after many experiments, that at the bottom of each basket there is a base (Figure 9), which acts as the centre and is the starting point of the act of weaving.

_Almost every basket is woven like this, starting from a centre. This is the first base I had woven with the help of the master. It was really hard to make._ (Hüsna Budak, 2015 project report)

![Figure 9. An example of a finished base](image)

Although they are woven in different sizes, forms and for various functions, the presence of a central base is a common characteristic in all baskets. Due to the difficulty of its production and the precision required in making these, Hüsna thought that concentrating on the centre could yield favourable results. Proceeding from this common centre could lead to a result that could be applied to every basket, as well as aiding the production of the craftsperson. Together, the craftsperson and the designer carried out a number of experiments on this idea:

_I brought the two wooden pieces that I prepared to Master Pembe, to test the idea of incorporating different materials into the centre of the basket. We used the square one at the centre of the base, and the circular one as the base itself. Placing a rectangular piece at its centre, the base of the basket had the same form too. If we were to weave the sides of the basket we would have ended up with a rectangular basket. The shape of the piece placed in the centre also determines the form of the basket._ (Hüsna Budak, 2015 project report)

Initially, considering it is a plant-based raw material like the materials used in baskets, various forms out of wood were produced to exercise different ways of intervention at the centre of the basket (Figure 10 and Figure 11). Hüsna would bring the wooden pieces she had produced to the craftsperson at her visits, and they would discuss what to do and how to weave with these. Various
experimentations were carried out with wooden pieces that would be utilised as part of the base or that would become the base itself:

At first, I had in mind to place the wooden piece in the centre of the base and weaving around it, but after the trials with the rectangular piece I had the idea of using this piece as the base itself. As a small experiment, we wove a basket with a wooden base. After the base was put in place, I wove the body of the basket. Master Pembe said that it would be better if there were more holes around the wooden cylinder allowing more vertical stakes. (Hüsna Budak, 2015 project report)

Through these experiments and discussions by way of making Hüsna was able to get feedback from the craftsperson as well. As the production of the perforated form in wood was expensive and difficult, other materials were also tested. She experimented base interventions with many different materials like clay, rubber, Styrofoam (Figure 12) that she was familiar with from her design education:

Working with wood was not really appropriate for reed baskets. The wooden pieces had to be drilled at particular axes and angles. And this was both a difficult and an expensive process, so I decided to try out different materials like Styrofoam and clay. After many attempts, I decided that none of these were suitable for reed and for a basket. As a result, I decided to work with a 3D printer offering a flexible method of production, and the material used in these printers, PLA. (Hüsna Budak, 2015 project report)
3.3 The Contribution of the Designer

Another important leap in the project was realised when the designer incorporated the three-dimensional (3D) printer method - that belonged to her knowledge set - into the production relationship. Compared to wood and other materials that have been tested before, 3D printing, as similar to weaving is a much more flexible method of production, and it is a lot easier to produce the perforated forms required at the base with this method. In an effort to discover the possibilities that might arise from the use of the 3D printer, various attempts were made to establish a functioning dialogue between weaving and the printer.

In the first experiments (Figure 13), a number of different 3D parts were shared with Master Pembe. The designer and the craftsperson began to weave together and figure out what could be done with these, and in keeping with the advice of the craftsperson, many issues such as the placement and number of holes necessary were discussed. Another point that was raised in these discussions was concerning the stakes, which had to be bent too much, rendering them weak and causing a worn-out look. Based on these feedbacks, the designer created a new set of parts (Figure 14). Another important point that was noticed in these experiments was the flexibility of the 3D printer production and the variety of forms it could produce, as well as the ease with which the craftsperson could relate to these alien parts:

*Master Pembe thought that the weaving technique was made easier by some of the parts I brought. For instance, she was really excited about weaving with one of the plastic parts because she could start weaving a basket immediately, without weaving a base, which is very difficult to weave and mandatory in the traditional method. (Hüsan Budak, 2015 project report)*
From this point onwards, they would leave the traditional form of the basket behind and begin experimenting with new possibilities together (Figure 15).

The 3D parts were designed both as a tool for production and as a part of the finished product. On one hand, these parts allow the craftsperson to weave different forms that she could not have woven without them, and on the other hand they become an integral part of the end product. As a visible component of the final product, the 3D parts manifest the possibilities that the dialogic process between designer and craftsperson generate.

A hybrid situation emerges out of two different methods of production, two different materials and two different practices, and through a collaboration between craft and design. Resulting in a series of products that have their own presence, with a distinct formal and structural language. Within the scope of the project, a set of 9 products consisting of 3D parts and woven reed emerged, revealing a spectrum of possibilities (Figure 16).

Each part constituting the One Over, One Under project points at a different potential of the combination of basket weaving and the 3D printer. The experiments show the flexibility of the basket weaving and the 3D printer. The two methods could easily accommodate one another. (Hüsna Budak, 2015 project report)

The combination of the 3D printer and basket weaving forms a negotiation between two seemingly opposing modes of production. The 3D printer and basketry belong to different moments along the historical development of the methods of production. While basket weaving is one of the oldest known methods of production, the 3D printer is one of the newest. Both forms of production are incorporated in the project by containing a knowledge set specific to respective participants /
collaborators. But when these converge in a production process, the interplay between their differences, and the revealed tension manifest possible modes of co-existence.

Figure 16. The 9 parts constituting the One Over, One Under project

4 Conclusion

In this paper, we present two principal propositions by way of discussing ‘One Over, One Under’, an industrial design student’s collaborative project with basket-weaving craftspeople in Sapanca, Turkey. The first one of these is how a situation of ‘learning from inside’, where the designer has a first-hand experience of production techniques, could shape the thought and the act of design. Our second proposition is that the knowledge sets and the technologies accessible by the designer and the craftsman could be interwoven through mutual fostering and a certain tension. As this example illustrates, field experience could be combined with competence in contemporary digital technologies, with the ability of modelling three-dimensional complex geometries, and more importantly with establishing a dialogue with a critical outlook on products and production processes. Such an approach can lead to various possibilities for designers, producers, and potential users.

When the cost-effective and flexible structure of new production technologies is combined with crafts in a certain manner, the exchange could present extensive possibilities of production for craftspeople, as well as opening up further possibilities for the act of design. The ‘One Over, One Under’ project brings together one of the oldest and most flexible production methods, basket weaving, together with one of the newest and most flexible methods of production, three-dimensional printers. This intervention, developed by the concrete and physical parts produced by the designer, provides a tool that aids the craftsman in her act of weaving, acts as an input that diversifies the forms and geometries that could be produced in basket weaving, and presents elements that eventually become part of the final object. Thus, a dialogical process is at work, rather than a consecutive design-production-product sequence.

The designer and the craftsman, the fields of design and crafts reinforce one another by applying forces over and under, just like the reciprocal forces inherent in basket weaving. Such a method where the designer’s contribution to production is both an outcome of learning from the inside and having a physical presence, the ‘consecutive’ and ‘hierarchical’ relationships between design and

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production are undermined. Instead of such distinctions, a positive and favourable tension and dialogue makes possible new products and modes of production.

The ‘One Over, One Under’ project offers an experiment considering both the technologies of production and the input of the designer. Apart from an approach that increases the potentials that crafts hold for the field of design, it offers potentials for elaboration and further propositions about the nature of the design act.

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5 References

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