On design as liberal art: The art of advancements
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Introduction

Imagine a group of museum employees in a meeting room. They are surrounded by a large collection of books, reports they and others wrote, phones, iPads and notebooks on which they write things down. For more than three years, they have been working on a project intended to transform their museum, the Amsterdam Museum, from an institution where the public can enjoy carefully curated art and learn about the history of the city, to an offline and online meeting place where the inhabitants of the city can also share stories, ideas and experiences with each other and the museum employees. They have been working on this project together with other colleagues from different departments of the museum and with people from outside the museum. Among their collaborators were web designers, museum volunteers, government officials, financial bodies and lawyers. Together, they have been planning and creating a new museum practice in which the story of Amsterdam is told not exclusively through art and historical objects but through a collection of museum objects, online and offline interactive technologies, and the public’s contributions of stories, pictures and personal objects. Their dream is to create a museum in which people can connect in a more personal way with the museum’s collection, with the city of Amsterdam and through these with each other.

Many designers today design not only at the scale of a product, but also ‘at the scale of life’, engaging in what Jones (1980) called ‘designing without a product’. The museum employees and their collaborators are designing a new way of being a museum. This new museum practice will bring into question the very identity of the museum, the ways of working of museum employees, the means they use to tell their story and the ways in which they relate to the museum’s collection and to the public (Maris et al. 2012, 2013). This expansion of the notion of design to incorporate ‘the scale of life’ is visible in other front running industries too, particularly in the social technology industry. The people working at Apple, for instance, are designing not just an elegant, user friendly mini-computer, the iPad we saw in the meeting room. They are designing for an entirely new way of living, working and interacting with computers.
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It is this type of designing ‘at the scale of life’, of ‘designing without a product’ (Jones 1980) that interests me and that I explore in this thesis. Jones (1980) explained designing without a product as ‘a way of living in itself’ shared by everybody interested in improving their world. In Jones’s (1980) view, designing without a product is not so much guided by a given, external goal, as by a ‘shared imaginative living’; designing without a product is ‘a goal-in-itself’. When engaging in designing without a product, designers (professionals or not) engage in initiating change ‘in the total situation’, ranging from the purposes of the things designed, to the way of living and working with the things designed, all the way to the practice of designing itself (Jones 1980).

Similar ideas have been put forward by authors who contemplated on the expansion of design from its focus on designing products, to design as integral to initiating change in all human activities. In a recent interview given at the Kolding School of Design International Advisory Board (http://www.designskolenkolding.dk/index.php?id=3469, retrieved on 20 October 2013), Buchanan explained the expansion of design in the contemporary world, to refer to a shift from products and communication to actions, activities and processes. In his words:

“The practice of design is expanding, but it still means "human making". The meaning of the word design has broadened, because we’re now able to design a wide variety of products, e.g. products that are tangible and products that are intangible. The biggest change in design practice has been the change from artefacts and communication into a new world of actions, activities, and processes.”

In light of these shifts in design, calls have been made in the literature to view design as a core discipline for engaging in the world, ‘a way of living in itself’ (Jones 1980). Alexander et al. (1977) called for a view of design as an activity at the center of everyday life. Simon (1969) argued that design needs to be seen “not only as the professional component of a technical education, but as a core discipline of any liberally educated man” (Simon 1996[1969]:138). Gropius (1937: 20), in his proposal for a new thinking of architecture, argued for a view of architecture as an “integral part of the stuff of life necessary for everyone in a civilized society.” Buchanan (1992: 6) put forward a view of design as a liberal art of technological culture, an art in which designers “combine theory with practice for new productive purposes.”
In examining the Amsterdam Museum design project, I build on Buchanan’s (1992, 1995, 2001) insights and explore the nature of designing without a product as a liberal art. Empirical evidence indicates that engaging in designing without a product is performing designing as a liberal art, as an art of advancements. Design as a liberal art of advancements is concerned with moving people and the things they live and work with forward. The move is not to a specific, agreed upon point in time and place under strict design requirements, but as a journey towards a better place where we can live with things. Design as a liberal art of advancements is an art of living, of being in the world that involves everybody and everything as equal partners in changing the world (Maris et al. 2012). It is an art interested in creating the circumstances that people and things can unfold in ever richer assemblages, in which people’s horizons can be extended so that things can develop differently and in which things’ horizons can be extended so that people can live differently.

Even though Jones introduced the idea of designing without a product in the 1980’s we have so far been restricted in theorizing about this type of designing and in illustrating it with empirical research. Yet, the value of understanding the nature of designing without a product is immense as many professional and non-professional designers today continue to practice it, with Apple and the Amsterdam Museum being only two examples.

Why have we so far been restricted in theorizing about designing without a product? In the largest part of the 20th century, the academic understanding of design was dominated by the design as process paradigm (Lawson 2006). The domination of design as process has narrowed our understanding of design to refer to a problem solving undertaking (Simon 1969, Dorst 2006). It has focused our attention on designing products which can be clearly defined in terms of their requirements and purpose (Cross 2001, 2011). Consequently, our vocabulary is restricted for talking about the design work done by designers like Steve Jobs and his followers, as well as the design work done by non-professional designers like the museum employees and their collaborators (cf. Boland and Collopoy 2004). Their design work is not limited to designing a product, but entails designing a way of living with those products in a foreseeable future. Designing a way of living with a product is not a problem that can be solved once and for all. Rather, it can only be advanced, one step at a time, as new wishes or challenges arise (Maris et al. 2012). Our vocabulary will remain limited as long as we continue to take for granted our own assumptions of what designing is all about.
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Following the design as process paradigm, we take for granted the idea that designing is a structured, albeit iterative process, in which professional designers make use of well tested knowledge to solve existing everyday problems (Simon 1969, Dorst 2006). Many academics have dedicated their time to mapping the design process, to understanding its stages and the types of decisions taken within each stage (Lawson 2006). We take almost for granted that design is done by drawing. We have seen these drawings as quintessential to the design process; they are the physical materialization of design thinking (Lawson 2006, Ewenstein and Whyte 2009). We praise the genius minds of individual designers, examine their drawings and follow their moves from ‘problems’ to ‘solutions’.

The detriment of this paradigm is that it nurtures an understanding of design as a stabilized, uncontested, linear albeit iterative process, which has a clear beginning – a problem, and a clear end – a solution to that problem. In such studies, discussions on how to approach developing a solution to the problem at hand find their closure in the designers’ modes of reasoning, the types of knowledge they draw on in their work and in the structural methods they employ in the design process. The solutions proposed, usually in the form of a product, are seen as a materialization, a stabilization of the different interests and points of view visible in designing.

Yet, when the design process is categorized and stabilized, it becomes uninteresting from both a practical and theoretical point of view. From the literature, we know the ideal stages of the design process. We know the different types of design methods and the ideal situations in which they can be applied to achieve the most optimal solution. However, this theoretical stabilization of the process of designing has great consequences for researching design. Namely, if we take as starting point in research that designing is a linear, albeit iterative process, that the designers’ theories are cognitive theories and that the design methods are standardized, then we have no way to see the issues, challenges and uncertainties designers experience in their work when they go about designing, when they employ such design methods in practice, when they make models and prototypes of the product to be designed or when they draw on existing design theories. Latour (2008: 12) made a similar argument when he wrote about design drawings:

“In its long history, design practice has done a marvellous job of inventing the practical skills for drawing objects, from architectural drawing, mechanic blueprints,
scale models, prototyping etc. But what has always been missing from those marvellous drawings (designs in the literal sense) are an impression of the controversies and the many contradicting stakeholders that are born with these.”

When we try to understand designing as practiced by those contemporary designers who engage in designing ‘at the scale of life’ (Jones 1980), the design as process paradigm falls short of accounting for the complexity and wickedness we observe in practice (Maris and Huizing 2012, Maris et al. 2012, 2013). The uncertainties designers engage in their work are hidden in the iterative process while their differing arguments are silenced into an overarching theory of design. We have no way of learning about the dilemmas designers have in their work, about how they assemble the world and how they understand the world as they try to change it for the better. The spirit of designing as a real life, world-making undertaking is lost in abstraction.

**Perspectives on design: from craft to liberal art**

If we are to begin to understand what designing without a product is, we need to first understand how design has been conceptualized so far. We need to unpack the various meanings that were loaded in the notion of design. Only after unpacking the notion of design, would we be able to advance our understanding of designing without a product, not as a mechanical art of problem solving, but as a liberal art of advancements.

Depending on the scientific tradition they work in, different authors have seen design as a process (Lawson 2006), a problem solving activity (Archer 1969), a creative activity (Reswick 1965), a science (Simon 1969), a working hypothesis (Buchanan 1992) or an act of faith (Jones 1966). Different perspectives on design can be identified too, namely design as craft, design by drawing, design as process, design as science, design as aesthetic embellishment, and design as a liberal art.

Many authors tend to make the distinction between the different perspectives as an evolution in practice that responds to larger societal and cultural shifts (see Jones 1980 and Lawson 2006). Writing about the traditional design methods, Jones (1980) argued that the first initiator of change in man-made things was the skilled craftsman, the maker-of-things.
Lawson (2006: 19) argued that particular to the work of craftsmen is a “natural, unselfconscious action-based approach”, one in which the craftsman designs objects as he makes them, through doing and experimenting, following traditional working patterns that were transmitted from generation to generation (Alexander 1964). Design thinking and design acting were performed simultaneously, unseparated from the act of making the object of interest. Jones (1980: 15) referred to design as craft as “craft evolution”, making reference to the ways in which a given tool or product evolved through generations as it was continuously reproduced and modified (Lawson 2006). At the basis of craft evolution, of the continuous reproductions and modifications lies, it is argued, a body of situated and negotiated folk knowledge, which resided in the collective mind rather than in that of any individual (Jones 1980, Friedman 2003).

Industrialization brought with it rapid technological developments, which Alexander (1964) argued, are too much for the craftsman’s evolutionary process to cope with. Designing is rethought following the division of labor in design, the development of scientific education in design principles and methods and the rationalization of design processes (Simon 1969, Cross 2001, Lawson 2006). Design becomes a professional practice, developed through specialized education and training, one in which design tasks are clearly defined and divided among specialized designers. A different approach to design is developed at that time, one that will be at the heart of the 20th century modern design practice, namely design by drawing.

Jones (1980) argued that the introduction of design by drawing led to a reconceptualization of the ways of working and making a product. For the first time, design thinking and making are separated, performed at different times, and in many cases, by different people. Design drawing is now seen as the quintessential activity of designing, the medium through which designers think and express their creativity (Ewenstein and Whyte 2009). Individual creativity and talents are encouraged, appreciated and awarded. Design knowledge becomes more and more specialized. It does not reside in the craftsmen’s collective mind as folk knowledge anymore, but rather in the heads of specialized individual draftsmen (Lawson 2006). Cross (2011) argued that this division in design between making and thinking has made possible the study of design thinking in its own right.

In the academic literature, the study of design and design thinking has attracted the interest of many researchers. This academic effort led to the development of a scientific approach to
design. In the literature, *design as process* soon gained popularity. It is rooted in a rigorous scientific base that employs scientific methods to model design problems. Design as process is conceptualized in a positivistic manner as a set of activities that can be easily identified, singled out and studied objectively. Design is viewed as goal-oriented, in which the goal is offering a solution to a given well-defined problem found in a given system or organization; meeting a need; improving a situation or creating something new or useful (Hevner et al. 2004, Piirainen et al. 2010). Different authors proposed different models of the design process (for architecture see Markus (1969), Maver (1970); for industrial design see Archer (1969); for information systems design see Hevner et al. (2004)). Yet, common stages can be easily identified: definition of the problem, identification of the field of solutions, implementation of the chosen solution and evaluation of the implementation process. As Sidorova et al. (2008) argued, issues of system functionality and design take central stage in these types of research while the implementation success of these systems is rationally evaluated in terms of the utility of the system.

Such courses of action in the design process, it is argued, are never taken at random. Rather, they involve the application and testing of rigorous theoretical thinking. Based on this argument, another conceptualization of design becomes visible, that of design as science. Winter (2008: 471), for example, coined the terms ‘design research’ to describe “research aimed at creating solutions to specific classes of relevant problems by using a rigorous construction and evaluation process” and ‘design science’ that “reflects the design research process and aims at creating standards for its rigor”. At the core of design as science rests the idea of design as systematic, based on rational thinking, predictability and use of generalizable knowledge. Simon (1969), in his outline of design science, illustrated such ideas by arguing that at the basis of design science rests the idea of applicable theories of how to do things to accomplish desired goals. Such a theoretical, scientific thinking in design, Friedman (2003: 515) argued, “enables the designer to move from an endless succession of unique cases to broad explanatory principles that can help to solve many kinds of problems”. The view of design as science is in direct opposition with that of design as craft outlined above. At the core of design-as-science, it is argued, rests systematic instead of unsystematic knowledge, rationality instead of creativity, predictability instead of invention.

Another meaning given to design is that of aesthetic embellishment of products (Balsamo 2010). Viewed from this perspective, design is equated with style and form, which are seen as
something separate from the function of the product. Design does not so much belong to the production domain, as it does to the domain of consumption. Design becomes a matter of taste and appeal (Balsamo 2010). Design objects become status objects with which people of all generations want to associate. Many users of Apple computers, for instance, argue that it is primarily the ‘smooth design’ of the products that attract their attention, while owning an Apple product is an indication of being hip, modern and cool. Also from this perspective, design is something related to fashion and fads, as something temporary, which is in opposition to the materiality of the product itself. This perspective on design has been rightfully criticized as a serious misconception of what the work of a designer entails (Buchanan 2001). Newer interpretations of design as aesthetics bring to the fore the idea of care and engagement (Borgman 1995). The aesthetics of products or systems are what engages us with the material world. Sensibility to form and beauty is part of human nature; we are attracted by what we conceive as beauty. A beautiful pen, a beautiful piece of music or a beautiful phone engages us at an emotional, sensory level. For this perspective therefore, to design aesthetically implies to foster engagement between the social and the material.

Buchanan’s (1992: 5, italics in original) described the transition in design too and argues that “we have seen design grow from a trade activity to a segmented profession to a field for technical research and to what now should be recognized as a new liberal art of technological culture”. For Buchanan (1992: 6), design as a liberal art is an integrative discipline, “concerned to connect and integrate useful knowledge from the arts and sciences alike, but in ways that are suited for the problems of the present”. This integrative nature of design as a liberal art was fundamental to the Bauhaus School (Gropius 1937). The conceptualization of design as a liberal art departs from the previous approaches in one fundamental way, namely regarding its view of the nature of the subject matter of design. As Buchanan (1992: 15, italics in original) explained:

“The linear model of design thinking is based on determinate problems which have definite conditions. The designer’s task is to identify those conditions precisely and then calculate a solution. In contrast, the wicked-problems approach suggests that there is a fundamental indeterminacy to all but the most trivial design problems.”

While determinate design problems can be solved by means of calculations or other solution-focused strategies, indeterminate problems remain open-ended as they are too complex, too
wicked to be solvable through rational means. When Buchanan (1992) and Cross (1982) talked about design as ‘a technological culture’, they conceptualize technology in a different way than the common understanding of it as an artifact. Following Dewey, they view technology as “an art of experimental thinking” (Buchanan 1992: 8). Design as a liberal art of technological culture is visible in any domain of human life, as Buchanan (1992) argued: “There is no area of contemporary life where design – the plan, the project, the working hypothesis which constitutes the ‘intention’ in intentional operations – is not a significant factor in shaping human experience”. Design as a liberal art can be applied to any human domain, categorized by Buchanan (1992) as the domains of symbolic and visual communication, material objects, activities and organized services to complex systems of living, working, playing and learning.

In light of my exploration of the nature of designing without a product, of designing ‘at the scale of life’ (Jones 1980), I consider Buchanan’s (1992, 1995, 2001) view on design as a liberal art as highly relevant and appropriate. Design as a liberal art is an art in which theories of design are not tested and falsified but put in practice and valued based on their ability to deliver practical outcomes that work for the people engaging in or with the designed. It is an art that supports a way of being which foregrounds everybody’s participation in shaping their world (cf. Simon 1969, Alexander et al. 1977). As a liberal art, design is essential to any person interested in taking an active part in a ‘shared imaginative living’ of what our collective existence is to become in our hands (cf. Latour 2005).

In his conceptualization of design as a liberal art, Buchanan (1992, 1995, 2001) continued to focus on designing products, seen in his discussion of graphic design, everyday products, sequences and schedules to reach organizational objectives, and built environments. In these writings, the designer is portrayed as somewhat detached of the designed. In Knorr Cetina and Bruegger’s (2002) terms, Buchanan does not account for object sociality, in other words, for how the designer and the designed share the same space for living and working and are ‘constitutively entangled’ (Orlikowski 2007) in such a way that through designing both the designed and the designer change (cf. Jones 1980, Maris and Huizing 2012, Maris et al. 2012). Likewise, Buchanan continued to focus on design thinking as a cognitive ability, exercised through placements, a view which again detaches the designer from the world he works in. Following Gherardi (2010), I argue that designing is a matter of collective performance rather than of individual effort and that design knowledge is integral in doing...
rather than cognitive (Maris and Huizing 2012). Designing is distributed across an entire assemblage of people and objects who engage in designing and is performed as a dynamic activity over time. From this perspective, we could argue that designing is not a matter of using placements, but of place-making or what Gherardi (2009) called ‘taste making’. The designer, the designed and the practice of designing itself are transforming through these performances.

What is needed therefore is a view of design as a liberal art that foregrounds designing as being in the world, with the designed and the designer sharing the same space for living in a ‘constitutive entanglement’ (Orlikowski 2007). A view of design is needed that leaves things open and foregrounds the emergent nature of designing, focusing not on using placements, but on place-making or ‘taste making’ (Gherardi 2009), not on drawing but on drawing things together, not on solving problems and creating finite products but on advancing issues of which products are only one part.

In this thesis, I build on Buchanan’s (1992, 1995, 2001) idea of design as a liberal art. I develop an understanding of design as the liberal art of advancing what Latour (2005) coined ‘assemblages of people and things’, or what Orlikowski (2007) called ‘constitutive entanglements between the social and the material’. In simple terms, I put forward a view of design as a liberal art concerned with how we can lead a free and enriching life with things. Across the various chapters of this thesis, I examine different aspects of this art only to bring them together in a theory of design in the Conclusions of the thesis.

What is design?

Looking at the diversity of perspectives on design outlined above, what seems to be central is the elusiveness of the concept itself. Putting forward a definition of design seems therefore a very error-ridden act, as there will always be the danger that we exclude something. Yet, for the purpose of this study, I consider it useful to have a working definition of design, one that is meant more to indicate the direction of the investigation. I find Buchanan’s (1992: 8) definition of design as “the plan, project or working hypothesis [for] shaping human experience” insightful and I adopt it in this study. As for the notion of designing, I employ it
in this study to refer to the human purposeful acting to develop and advance design in a specific actor network.

How to resume the task of exploring designing without a product

So how can we break loose of our own taken for granted assumptions about the nature of design as a mechanical art of problem solving? My starting point is the assertion that design is what designers do, not what theorists say designers do. The discrepancy between theory and practice has been recognized by Buchanan and Margolin (1995: x), who argued:

“One of the anomalies of the twentieth-century culture, particularly of the academic culture, is an excessive separation between theory and practice, between the words and symbols used to understand important subjects and the concrete actions of individuals and groups who employ personal and formal knowledge to accomplish practical purposes.”

The effect of such a separation between theory and practice is that too often we explain design by referring to larger social, cultural, economic forces, developing a larger-than-life theory of designing, instead of drawing on the designers’ own experiences and life stories and develop a theory internal to the field. Buchanan and Margolin (1995: x) lamented the impact of such theoretical practices that push the designers’ life worlds to the background by making the following worrying observation “…the agency which serves and shapes our daily lives is seldom more than a footnote to other causes in social and cultural discourse.”

If we are to understand what doing design is and what doing design does in the world, we need to leave the task of composing designing to the designers themselves and have them tell their own stories of what their world is made of. Yet, how can we do this?

I follow Bruno Latour’s (2005) way of working in studying designing without a product. Central to Latour’s Actor Network Theory (ANT) is the idea that there is no such thing as ‘society’, held together by ‘social forces’ that offer ‘social explanations’ to ‘social events’. Latour (2005) rejected this tautological thinking and argued that society – in Latour’s terms the ‘collective’ - is always in the making through the many connections humans and non
humans engage in. Latour (2005) argued that taking a stabilized ‘society’ as a starting point for any inquiry into the nature of collective existence, would not do justice to the actors’ rich associations, worldviews and actions that they bring to the fore in their making of their collective life. By returning to the etymological meaning of ‘social’ as ‘to follow’, ‘to associate’, Latour (2005) put forward the premises of a sociology of associations. In this sociology, the task of the researcher is to ‘follow the actors’ in their making of their own collective existence, by tracing the associations they engage in, instead of imposing on them a scientific explanation (Latour 2005).

Following Latour (2005), I argue that taking a stabilized design process as a starting point for inquiry into the nature of designing without a product would not do justice to the designers’ own associations, dilemmas and worldviews. What we need is a focus on practice (Gherardi 2012), in which we follow the designers themselves and trace what designing is in their everyday work (Maris et al. 2012). Practice theory has gained popularity in organizational studies due to its critique of the predominant views of knowledge in organizations (Orlikowski 2000, Brown and Duguid 2001, Schatzki et al. 2001). Previous approaches theorized about knowledge either as something residing in the individuals’ heads (a cognitive perspective) or as a production factor which can be easily managed, stored and used strategically (a commodity perspective). Practice theory puts forward a view of knowledge as “a collective, situated activity” (Gherardi 2012: 199): knowing and learning is something people achieve together by engaging in collective action. In practice-based studies, the attention is directed to what people do, in collectives of human and non-human actors, as it is argued that knowing is integral to doing (Corradi et al. 2010, Nicolini 2011).

A focus on practice does not entail imposing yet another frame on designing, different in some ways from design as process or design by drawing. Rather, it entails the foregrounding of what designers do in their everyday work. It directs the focus on things unfinished, under negotiation, on projects that are not yet stabilized and that are still running with no end in sight. It requires a sensitivity to the designers’ own worldviews, dilemmas and collective negotiations. And it demands reflection (both from the researcher and the designers alike) on the consequences of designing, on what does designing do. In other words, it demands a reflection on how doing designing reproduces not only the designers’ practice but also it brings about a certain order in our own everyday practices and associations.
In the overview of perspectives on design presented above, we have seen how different authors theorized about design from stabilized frames of reference: design as process, design as science, design as craft, design by drawing and design as liberal art. Rather than obtaining a clear understanding of the composition of the design world, we are left with a number of uncertainties. Latour (2005) introduced the notion of uncertainties to refer to what is still unclear, uncertain in the field of inquiry in this case, the field of design. In his exploration of the nature of ‘the social’, Latour (2005) examined five uncertainties about the social world: on the nature of groups, nature of actions, nature of objects, nature of facts and the types of studies performed in the science of the social. These uncertainties pile on top of each other, further building on each other, a fact that amplifies our uncertainties even more. In this thesis, I examine four uncertainties about the composition of the design world, observed in both literature and practice:

- **1st uncertainty**: on the nature of the object of design: is design a matter of solving structured or ill-structured problems by initiating change in a finite product or system, or is it a matter of advancing wicked assemblages of people and the objects they live and work with? Is design a liberal art, a vocational art or a science?
- **2nd uncertainty**: on the nature of design knowledge: is design knowledge a cognitive knowledge, residing in the designers’ heads, to be employed in designing like any other resource, or is it a matter of taste making, of learning through the senses, of collective knowing by doing? Is design an integrative discipline or does it have its own knowledge base?
- **3rd uncertainty**: on the nature of design process: is designing a matter of following well-defined stages of designing, with a clear beginning and a clear end, or is it a matter of practice, of collective performance, of designing over time? Is a designer the one who is trained and licensed as a designer or the one who changes current situations into preferred ones?
- **4th uncertainty**: on the nature of the act of design: is designing a matter of drawing and making changes in representations of the world, or is it a matter of drawing things together, of collective living in the world? What changes through designing, the designed, the designer, the practice of designing, or all at once?
Following Latour (2005), I argue that by refraining from imposing a stabilized framework on the practice of designing, as design is problem solving, design is performed by drawing or design knowledge is a resource, we are better prepared to understand how designers themselves make sense of their world and how they deal with these uncertainties about the nature of their work. In their work, designers engage with these uncertainties by discussing their extremes, by negotiating their meanings, by making choices and by appraising their appropriateness to their practice. In this thesis, these uncertainties become visible across four sets of extremes, that the museum employees and their collaborators made discussable in their aim to transform the museum into an online and offline meeting place:

- The museum as an institution for preserving the history of Amsterdam vs. the museum that needs to open up to the world and tell the story of Amsterdam together with the public
- The museum as a place where objective knowledge and historical objects are collected through research and curating vs. the museum as a place where knowledge is gained through learning with others and where historical value and identity are negotiated
- Designing online communities following a service level agreement vs. designing online communities through partnering, trust and empathy
- Designing an organization by means of a plan (strategy) to be implemented later and top-down vs. designing an organization in the here and now, by involving all the actors concerned, both human and non-human

Controversies arise in practice about how to define the object of design, what knowledge is needed in designing, how to approach it and with what desired goals. Latour (2005: 23, italics in original) argued that ANT is “able to find order much better after having let the actors deploy the full range of controversies in which they are immersed.” As such, we can learn about designing without a product, what it is and how it is practiced in a real life project, by deploying the full range of controversies designers engage in about the nature of their work and the composition of their design world.
Research aim

What Latour did for the notion of ‘the social’, I aspire to do for the notion of design. In his book, Latour engaged in the task of redefining ‘the social’ as collective by feeding off controversies about the nature of the social world, visible across the classical sociology of the social and the new sociology of associations. In this thesis, I aim at examining the nature of designing without a product by feeding off controversies about the nature of designing visible across theory and practice. Through this analysis, I aim at developing a vocabulary for talking about designing at ‘the scale of life’ (Jones 1980). Building on Buchanan’s (1992, 1995, 2001) insights, I want to take the first steps towards a theory of designing, not as a mechanical, product oriented process, but as a liberal art of advancing our ways of living with things.

Research objectives

To attain this aim, I set out the following research objectives:

First, I want to pick up the thread left by Jones in the 1980’s when he distinguished between Designing With a Product and Designing Without a Product and examine how both types of designing have been addressed in the literature. The former is well entrenched in the design practice of professional architects, engineers and industrial designers, who engage in ‘initiating change in man-made things’ (Jones 1980). The design literature displays a rich array of studies on design problems, design processes and methods, design thinking and design drawing that I will review in this thesis. The latter, designing without a product, is less clearly defined and as such in more need of exploration.

Second, relying on the theoretical and methodological insights of Actor Network Theory (Latour 2005), I want to examine and deploy the many design controversies observed in the Amsterdam Museum project on what needs to be done and how to transform the museum from an institution to an online and online meeting place. Venturini (2010: 263, italics in original) argued that “controversies remain the best available occasions to observe the social world and its making”. That is why, I believe that by examining empirical design controversies, this study will bring to light new and unique insights into the nature of
designing without a product and into what it means to practice designing ‘at the scale of life’ (Jones 1980).

Third, I want to examine the uncertainties on the nature of designing without a product by comparing and contrasting the theoretical conceptualizations of design problems, design thinking, design processes and methods and design drawing with the insights on these concepts obtained from deploying empirical design controversies. I want to evaluate the appropriateness of existing concepts and theories, which were built in the tradition of designing with a product, for studying and theorizing about designing without a product. I expect that once we start moving away from design as a process for problem solving, the existing concepts would need to be reconsidered. I intend to draw on the empirical insights from the Amsterdam Museum project to develop a vocabulary to talk about designing without a product. With this vocabulary, I want to make the first steps towards a theory of designing without a product as an art of advancing our ways of living with things.

**Research questions**

In his inquiry into the nature of the social, Latour (2005) asked three particular questions. I will adopt and adapt these three questions in my exploration of the nature of designing without a product.

*How to deploy the many controversies about designing without a product without restricting designing in advance to a specific domain (individual or structural)?* 

With this question, I want take the first steps towards an actor network methodology (Latour 2005) that can allow us to examine design controversies as they play out in the real life performance of a design project. I put forward the argument that studying designing without a product by using structural theories and quantitative methods that emphasize designing as a well-structured process whose effects can be calculated and predicted (Hevner *et al.* 2004), does not do justice to the wickedness and indeterminacy of the practice of designing. The same argument is extended to theories and research methods that focus on understanding how individual designers think and work (Cross 2011). Such theoretical and methodological approaches, while helpful in particular studies, are not useful in studying designing without a
product where the focus is not on the individual designer and his work, but on the ‘the total situation’ (Jones 1980).

It is possible to deploy design controversies if and only if researchers refrain from keeping frames stable, as design is problem solving or design knowledge resides in designers’ heads. Following ANT, the design world does not exist out there, as stable and independent, made of individuals, objects, actions and facts. Rather, the design world is made by these actors as they engage together in practice. It is emerging out the many controversies, discussions and negotiations human and non-human actors engage in together as they try to change their world for the better. Design is a matter of deploying controversies. By staying close to the actors themselves, following them as they enroll others in practice and allowing them to carry on their controversies without imposing a stabilizing frame on them, it will be possible to see and describe the uncertainties about the nature of designing: is design a process or a practice, is design knowledge a cognitive ability or integral to doing, is designing a matter of problem solving or a matter of advancing our ways of living with things?

How to render fully traceable the means allowing designers to stabilize these controversies?

Controversies are stabilized, in order words agreements are made and design proposals are put forward in practice. Yet, stabilization is an effect of many discussions, negotiations, enrollments of human and non-human actors, tours and detours performed in practice, and not a starting point for theorizing (Latour 2005). Way too often researchers take as a starting point a stabilized design process, meaning that they have performed the stabilization work on behalf of the designers themselves. With this question, I want to take a step back and explore how designers in this study engaged themselves in stabilizing controversies about the nature of their work.

This can be done by inquiring into design as an act of associations in which people and the things they work with continue to enroll each other in practice. Designing then is seen as an act of drawing things together (and as more actors are drawn together, the more perspectives would be voiced and the more controversies would be ignited). Latour (2005) argued that to render traceable, in other words to make visible how actors engage in stabilizing controversies, researchers need to remain aware of two things. One the one hand, in the study
of designing, researchers should refrain from jumping to fixed phases of designing, to finished drawings, to finished products or solutions as sources of explanations of designing. That is why, in this thesis, I focus on movements, on those situations in which the course of designing is still unclear and contested, in which things are still being drawn together and negotiated, in which existing theories of designing and best practices are questioned and in which the object of designing is still emergent. Only then negotiations are visible, how such negotiations are carried out and with what effects.

On the other hand, researchers, in this case of design, need to refrain from jumping to individual level of creativity or to the process level of rational design decision making as means of resolving debates. In Latour’s (2005) terms, researchers need to keep the design world as flat as possible. To keep the world flat, it means that no theoretical priority is given to either individual level or structural level of analysis. Rather, the theoretical focus is on connections, enrollments and associations. That is why, in this study I focus on those situations in which designers enroll other actors, human and non-human in building and expressing their worldviews and their arguments. Only in such situations it becomes visible how temporary connections and agreements are established in practice.

Through which procedures it is possible to reassemble designing without a product not as a mechanical art of solving design problems but as a liberal art of advancements?

To develop a new conceptualization of designing without a product, not as a process for problem solving but as a liberal art of advancements, I will employ the three procedures of practice studies, namely the three readings of practice proposed by Gherardi (2010). The first reading, a reading of a practice from outside, is concerned with identifying the elements composing a practice that make it recognizable as a practice to its practitioners and non-practitioners. With this reading, I will examine the elements of the discipline of designing as problem solving and of the discipline of design as a liberal art, in terms of philosophical underpinnings, ontological perspectives, nature of design problems, task of designers, nature of design knowledge, design methodology, act of designing and evaluations and appraisal. I will compare and contrast them with the aim of identifying the specific characteristics of design as a liberal art of advancements.
The second reading, a reading of a practice from inside, is conducted from the point of view of the activity being performed. I will examine what the activity of designing consists of in designing as problem solving and in designing as a liberal art, how and by whom it is performed and with what (intended) effects. I will explore the nature of design knowledge in problem solving and in design as liberal art, as knowledge is the ordering mechanism of every activity in a practice. This reading will allow me to understand the nature of design as liberal art of advancements as it is performed in practice.

The third reading, a reading of practice as a social practice, is concerned with the examination of the social effects of performing a practice. With this reading, I will consider the larger societal implications of doing design, of engaging in design as a liberal art of advancements. This reading will allow me to examine the societal effects of design and see the political project that design as a liberal art is nurturing, a project centered on how we could live our lives together with the objects that enrich our existence.

**Theoretical contributions and practical relevance**

By tracing the actors themselves as they advance their understanding of the new entanglements in the emergent future of the Amsterdam Museum, and by feeding off controversies in the ever present design uncertainties of the nature of work, process, method and knowledge, I make the following theoretical contributions to design theory:

I advance Jones’ (1980) theory of ‘designing without a product’. I offer empirical evidence of the nature of designing without a product, how it is practiced in the real life context of a museum and with what effects. I further advance Jones’ (1980) notion of designing without a product by theorizing about its nature, what kind of design is designing without a product and how is it different from designing products. I offer a view of designing without a product as a liberal art of advancements.

I further build on Jones’ (1980) understanding of designing without a product by extending his definition of design. Jones (1980) viewed design as ‘to initiate change in man-made things’, a view that remained dominant in the design literature to this day. With the example of the Amsterdam Museum, I offer evidence of designing as to initiate change in ‘constitutive
entanglements’ (Orlikowski 2007) between people and the things they live and work with. This is highly relevant for theorizing as it helps us move beyond the distinction between micro- and macro-phenomena, between human agency and structure, between the individual genius and abstracted design process. Jones’ (1980) view, shared by many authors in the literature is that change is as planned, conceived and envisioned by the designer. I argue that change is mediated, co-created and performed by both humans and non-humans. This shift helps us theorize about designing as a performative, sociomaterial practice in which the material is a constitutive element, rather than a means to an end.

I contribute to Buchanan’s (1992, 1995, 2001) conceptualization of design as a liberal art and to his effort of understanding what kind of art is design as a liberal art by drawing on Gherardi’s (2009, 2010, 2012) notions of collective knowing in practice and taste making. I extend Buchanan’s view of design as a liberal art by examining it from a post-humanist perspective (Latour 2005, Orlikowski 2007). I offer empirical evidence that design as liberal art is an art of living with things, of advancing constitutive entanglements, of which the designers are a part too, by deploying controversies about what needs to be done and how. It is an art of drawing things together and making the emerging assemblages work. And, it is art of learning through the senses, by engaging in practice with others; it nurtures a knowing by doing through continuous appraisal and taste making.

I further contribute to design theory by taking the first steps towards an actor network methodology for studying design. By means of this methodology, we can examine designing as performed by designers, without framing a priori their world into a design as process, design by drawing, or design as problem solving. In this way, we can narrow the gap between theory and practice, and offer an understanding of design as what designers do, rather than what theorists say designers do. Such practice-based theories of design can be more relevant for practice, not as prescriptive theories telling designers what to do (they know that already) but as a means for reflection and appraisal of their practice.

I bring a contribution to organizational designing, by offering empirical evidence of a different type of designing than the strategic planning for effectiveness theories offered in organizational design. I offer empirical evidence of organizational designing by drawing things together for advancements. Researchers interested in studying organizational design, as well as those interested in initiating changes in their organizations would benefit more from
examining the constitutive entanglement between technology and organization: you cannot implement a new technology without considering how the organization of work and processes needs to change to make that technology part of the organization’s practice.

As for the designers themselves, those I worked with in this project and those learning about this study, the insights I present in this thesis might not be of much practical help. That is so, because design as liberal art is not a prescriptive art, telling people what they need to do to improve their world. On the contrary, it is a liberal art of living with things. Every design office or organization would create its own way of designing, its own way of working and living with things.

Yet, the insights I present in this study do make a call for designers to open up to the world, just like the Amsterdam Museum opened up to the world. By opening up to the world, contemporary designers engaged in designing products and in designing without a product would begin to see that who they are and what they know is not a matter of their talents and training; it is a matter of being engaged, constitutively entangled with all those participating in design and being affected by the design.

That means that their responsibilities are shifting from caring for the performance of a product, to caring for the well-being of associations of people and things; from controlling a process to arranging the practice. Their responsibility is a matter of making sure that people and the things they live with can unfold in ever richer assemblages which do not, in any way, limit the freedom of any member of the assemblage to participate in the world.

**Composition of the thesis**

In the next chapter, I discuss the methodological considerations in this research. I explain how design controversies took me by surprise during the empirical research. I explain too how I came to learn to feed off these controversies in my exploration of designing without a product. I present the strategies I used to study designing without a product, both while engaging in the empirical research as well as in analyzing the data. In this chapter, I offer an answer to my first research question, namely: How to deploy the many controversies about design without restricting designing in advance to a specific domain?
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In the following chapters, I offer an answer to my second research question, namely: How to render fully traceable the means allowing designers to stabilize these controversies? In these chapters, I examine four interrelated uncertainties about the nature of design and deploy the controversies that are ignited in practice as designers begin to make these uncertainties discusssable.

In the third chapter, I explore the uncertainty visible in both literature and practice on the nature of the task of designing. In this chapter, I ask the question: is designing without a product a matter of problem solving or is it a matter of advancing wicked assemblages of people and the objects they live and work with? After illustrating, with examples from the Amsterdam Museum, how contemporary design problems are becoming more and more wicked I explore in the fourth chapter, the uncertainty on the nature of design knowledge. I ask the question: is designing without a product a matter of rational calculations, or of creative insights, or a matter of collective taste making?

After describing how the designers in the Amsterdam Museum engaged in designing by means of taste making, I explore in the fifth chapter, the uncertainty on the nature of the design process and design methods. Here, I ask the question: is designing without a product a process in which methods produce results or is it a practice, in which designers engaged in collaborations perform (towards) results? And after illustrating how in the Amsterdam Museum project, designers perform towards results, I explore in the sixth chapter, the uncertainty on the nature of the design act. I ask the question: is designing without a product a matter of drawing and making objects work, or is it a matter of drawing things together, and making the emerging assemblage of humans and things work?

In the conclusions to the thesis, I offer an answer to my third research question: Through which procedures it is possible to reassemble designing without a product not as a mechanical art for solving design problems but as a liberal art of advancements? Following Gherardi’s (2010) three readings of practice, I present here the outline of design as a liberal art of advancements, illustrate how it builds on Buchanan’s (1992, 1995, 2001) insights and how it differs from the mechanical art of solving design problems. I also address here some future research implications of this study.