On design as liberal art: The art of advancements
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First Controversy: Beyond Problem Solving – Advancing Constitutive Entanglements

The dream of many - if not all - designers is to make the world a better place. This is their dream, no matter if they work in the domain of software development, fashion, architecture, art and culture, or any other domain. They strive to fulfill this dream every day by means of choreographing and advancing assemblages of people and things, assemblages that add value to human life (Jones 1980, Boland and Collopy 2004), and that hopefully would develop that ‘quality without a name’ (Alexander et al. 1977).

The dream of creating a better, more open, interactive and socially responsible museum has been nurtured in the Amsterdam Museum for many years. Museum employees have been trying to find suitable fresh arrangements in their interaction with the public, in the museum’s supportive technologies and ways of organizing. The ambition the Amsterdam Museum has put forward is that by 2020 the museum would be ‘a meeting place’ for those interested in the story and history of Amsterdam, be they local inhabitants, museum employees, researchers, historians or any another interest group. The aim was to change the museum from a cultural, educating institution to one in which joint learning with the public is promoted, from a collector of history to a co-producer of life stories, and from an authority in art, to a host of artistic expression. This vision for the Amsterdam Museum was clearly indicated in the Policy Plan Amsterdam Museum 2020 (2011):

“In 2020, the Amsterdam Museum is an open and accessible museum that increases the bond with and between different groups of people living in Amsterdam and that functions as a ‘meeting place’ of the city. […] In addition, the Amsterdam Museum will be for tourists ‘the entry to the city’ by being the connecting element between tourists and other cultural historical attractions in the entire Amsterdam metropolis.”
On Design As Liberal Art: The Art of Advancements

Current approaches to design have favored a focus on design as structured process aimed at solving ill-defined problems (Button and Sharrock 2000, Cross 2001, 2011, Hevner et al. 2004, Lawson 2006). The design as problem solving paradigm has focused the researchers’ attention on designers’ problem solving skills and abilities. Lawson (2004, 2006) analyzed how architects engage with their design situations, by focusing on styles of thinking and the principles, strategies and tactics they employ in understanding and solving problems. Lawson (2006) argued that designers engage with problems by combining both convergent and divergent thought, by applying rational thought and analysis and imagination and creativity respectively. There are different strategies through which designers cope with the insecurity of the problem situation, namely by generating alternatives and working with ‘parallel lines of thought’ (Lawson 2006), by following ‘organizing principles’ (Rowe 1987) or ‘primary generators’ (Drake 1979). Cross (1990, 2007) and Dorst (2010) similarly focused on the designers’ skills and abilities to deal with design problems. Cross (1990: 127) summarized design ability as “comprising resolving ill-defined problems, adopting solution-focused cognitive strategies, employing abductive or appositional thinking and using non-verbal modeling media”.

However, the situations which designers engaging in designing without a product confront themselves with do not render themselves easily to strategies of problem solving (Rittel and Webber 1973, Buchanan 1992). Think for instance at the problem of eradicating world poverty, fighting terrorism or tackling global warming. Global warming has been on the national and international governments agendas for decades. It continues to ignite a lot of debates inside these governments but also among them and other communities of scientists, industries and nature lovers. It is an issue in which everything is questioned, including the existence of global warming itself, how fast it happens and with what effects. What seems to be a solution for a community, is a bigger problem for another (Latour 2004). Adopting solution focused cognitive strategies (Cross 1990) might bring about temporal solutions to local problems of global warming but finding a solution to the larger problem of global warming itself seems to be an impossible task.

This is the case in the Amsterdam Museum too as, for instance, of how to support and facilitate interaction among the public and between the public and museum employees does not have clear cut solutions. There are no established ways to transform a museum into an online and offline meeting place. There are no tested theories and methods that can guarantee
success. And, there are no master designers who could manage the complexity of this project and take the design task into their own hands. There are various actors engaged in designing, each with their own expertise, interests and expectations. Designing a museum as an online and offline meeting place is not so much a problem in the sense design theorists understand the word, but more a collection of issues that involve a large number of actors, from museum employees and the public, to the museum collection, interactive technologies and public stories. And design issues cannot be solved, they can only be advanced in a continuous designing, a ‘designing over time’ (Jones 1980) in which small steps are taken, their consequences valued and ideas reconsidered as new needs and new ambitions arise (Maris et al. 2012).

The aim of this chapter is to explore the nature of designing without a product by examining a first uncertainty: is designing without a product a matter of problem solving, or is it a matter of advancing wicked entanglements? The structure of the chapter is as follows. In section 2, I follow the traces left behind as researchers and the designers in this study tried to come to grips with the nature of design problems. I address the notion of wickedness (Rittel and Webber 1973, Buchanan 1992) and present the discussions that are seen in the literature and at the Amsterdam Museum on what makes contemporary design situations wicked. In section 3, I follow the traces left behind as the designers in this study as well as in the literature attempt to deal with wicked design situations. I examine how researchers of organizational design explained the process of designing for emergence. I address the notion of advancements and explain through which means advancing is generated at the Amsterdam Museum. I end this chapter with the conclusions drawn from exploring this uncertainty.

**Design problems and wicked entanglements**

**Not a design problem, but a constitutive entanglement**

The term ‘design problem’ is so much engrained in the literature that many times we take the notion for granted as ‘something that needs to be solved’, ‘if it is not a problem, one cannot solve it’. Our understanding of what counts as a design problem, has been shaped by the predominance of research on designing products. Viewing designing from the perspective of product development, Asimow (1962) and Hansen and Andreasen (2008) equated a design
problem with a need that requires to be fulfilled, for instance the need for safer cars or the need for faster computers. Lawson (2006) described design problems as ‘unsatisfactory situations’ which require improvement, such as a noisy house which requires a better sound insulation. Hevner et al. (2004) discussed design problems as business opportunities, as when a company wishes to put an innovative product in the market, like the known example of James Dyson and his revolutionary vacuum cleaners.

When we look at design from the perspective of designing without a product, the notion of ‘design problem’ becomes problematic itself (Dorst 2006). The goal of the Amsterdam Museum is to become an interactive, online and offline meeting place where the local inhabitants and the museum employees can meet with each other and share their stories about Amsterdam. If we look at the Amsterdam Museum case from a product development perspective, one could argue that the design problem is that, at the moment, the museum is not interactive. Developing an interactive online community and including other interactive technologies in the museum itself would solve this problem. Yet, this is not how the museum employees themselves perceived their design situation.

For the museum employees, changing their museum into an online and offline meeting place is a matter of an all-encompassing transformation that touches upon the very essence of their museum practice. The Amsterdam Museum as an institution was seen by some of its employees as lagging behind and unresponsive to larger societal changes, to “new ways of communicating and being in the world”, as one employee put it.

One such societal change is in the way people relate to each other and to issues that matter to them. One employee explained that in the last years, a new type of museum public has come about (cf. Simon 2010). This new type of public consists of people who are active in all kinds of online environments. They want to express their opinions about issues that matter to them, instead of just silently listening to or watching the museum’s version of the story. In her words:

“People get used to all kind of possibilities on the internet and they ask for the same possibilities in the museum, even in exhibitions. They want to participate, they want to say they like it, they want to share because they are used to zapping, used to do things in their own ways at a time that suits them best.”
Another societal change is in the way people learn about history (cf. Odding 2011). Museum employees feel that more and more visitors do not “carry with them a historical knowledge of events” as one employee argued. Rather, visitors want to learn about historical events by doing, by talking to others, or by searching online. And yet another societal change has to do with the ways in which museums are funded. Due to financial crises, local governments and other financial bodies are diminishing the budgets offered to museums. At the same time, they require museums to be more clear and transparent about their role and importance for the local communities, who are contributing to the museums’ budgets through their tax payments.

However, the museum is not seen as in ‘need’ of change (Hansen and Andreasen 2008) to attract this new group of people, as their exhibitions and activities continue to be visited by interested public, particularly tourists. Likewise, the museum employees do not perceive the situation as necessarily ‘unsatisfactory’ (Lawson 2006), as more and more members of the public carry with them devices on which historical knowledge can be searched as desired.

Amsterdam museum employees do not perceive their situation as a problem to be solved. They see it as a challenge to move the museum further so that it can keep up with and respond to these larger societal changes. The museum employees want to achieve this goal by developing a more meaningful, personal and interesting relationship with the local communities, to become a museum for the local public too, not only for tourists. The aim for the museum is to become “an online and offline meeting place” where locals can bring in and share with others their personal experiences and opinions about the story and history of Amsterdam. In the long run, an involved and committed public would also be willing to support the museum financially, either by donating, participating in crowd funding or volunteering. As another employee put it:

“We want to do something new that we haven’t done before and that’s bringing the Amsterdamians together in a really stimulating and interactive environment. It’s not only meaningful for us if you write 100 stories, we want a creative environment that we do not have yet and in our vision we make clear that we want to be a museum for the Amsterdamians and not only for tourists. So ok let’s make a start, let’s bring them closer together and to us. We think that by creating this kind of environment people will participate more and maybe more people will join our projects, but it’s also an improvement if people respond more in a light way, by just liking things.”
If the museum is to accommodate itself to this ‘new way of communicating and being in the world’, it needs to undergo an organizational transformation. The manager of the e-culture department, responsible for arranging and managing the museum’s online presence on its own online communities and on the existing social networks, argued that an online community cannot by itself transform the museum into an interactive organization. What is needed is that the organization undergoes an all-encompassing transformation to create what she called ‘a sincere and authentic organization’. In her own words:

“If you develop a community but not adapt your organization or your relationship with the public I believe it will not work. You will not have a sincere and authentic organization if you preach interaction online but offline you are very hierarchical and authoritarian with the public. Both need to be developed in parallel, otherwise it will not work.”

The design space at the Amsterdam Museum is far from being centered on a product that needs to be developed and implemented in the museum practice. On the contrary, it is an assemblage (Latour 2005), a ‘constitutive entanglement’ that extends both online and offline (Maris et al. 2012, 2013). With the notion of ‘constitutive entanglement’, Orlikowski (2007) put forward an ontological claim that people and the objects they work and live with do not exist independent of each other, meeting only in one-way interactions (a humanistic or technological determinism perspective) or only in two-way interactions (a mutual reciprocation perspective). Rather, people and the objects they work and live with became what they are only in relation with each other. In Orlikowski’s (2007: 1438) terms: “(h)umans are constituted through relations of materiality – bodies, cloths, food, devices, tools, which, in turn, are produced through human practices.”

The Amsterdam Museum is such a ‘constitutive entanglement’ between people, technologies, budgets, the museum’s collection, public stories and personal objects. You cannot have a museum without its collections, employees, historical knowledge, buildings, technologies and public. It follows that at the Amsterdam Museum, the design space is populated with interactive technologies, the museum’s collection, public stories and personal objects which raise significant challenges to the museum employees in terms of how they can be arranged and accommodated in a museum as an online and offline meeting place. The design space includes museum employees, members of the public, but also volunteers, interns and
freelancers who work together with the museum employees. They too raise important challenges in design, in terms of how they can work together, how they can engage in collective storytelling online in communities and offline in exhibitions.

The design space further includes the web designers who would develop the museum’s online community. They too would need to work closely with the public to learn from them what they would like to have on the online community, they would need to be aware of the museum’s ambition of storytelling by means of historical objects and personal stories and see how they can accommodate this ambition on the online community. It includes public and private funding bodies that provide the money used in the museum, as well as the local government which creates cultural policies on the expected role of the museum in the local community. It includes other museums in Amsterdam, the Netherlands and the world, which also engage in similar transformations and which act many times as inspirations for the Amsterdam Museum.

In transforming the Amsterdam Museum into an online and offline meeting place, it is this entire constitutive entanglement that needs to be taken into account, shaken up, rearranged and advanced. You cannot have an open, interactive museum without art that attracts the public’s attention, without people who are interested in posting and sharing their own stories, or without technologies that facilitate and mediate such exchanges. And the more actors are enrolled and need to be taken into account, shaken up, rearranged and advanced, the more wicked is the nature of designing without a product (cf. Buchanan 1992, Callon 1986).

**Not ill-structured, but wicked**

Much of the academic writing and thinking about “design problems” has been so far influenced by the work of Herbert Simon (1973), seen as the father of the rational problem solving paradigm. In his seminal paper, Simon (1973) argued that most of the problems designers encounter in their work are ‘ill-structured problems’. For Simon (1973), ill-structured problems are those problems that, in contrast to well-structured problems, do not have a set of goals that can be well formulated at the beginning of the design, do not have a set of well-defined rules about how to approach them, that cannot be fully known by the designer and that lack a definite criteria for testing the proposed solutions.
While the two types of problems are different in the degree to which they can be defined, according to Simon (1973) there is no difference in the way they are solved. A problem solver can solve an ill-structured problem by transforming it, or framing it, as a well-structured problem. Simon’s (1973) ideas have found support in the works of among others, Sinott (1989), Basadur et al. (1994), Jonassen (1997) and Ge and Land (2003).

Simon’s (1973) ideas have attracted much discussion and also criticism. Yet, this criticism has been put forward from within the problem solving paradigm. No substantial move has so far been made away from the idea of design as problem solving. Dorst (2006) set to reanalyze and revise Simon’s ideas. He made a case for reconsidering the notion of ‘design problems’, which I support in this study, yet he did not manage to escape the problem solving doctrine. Dorst (2006) criticized Simon for not seeing a difference between how ill-structured and well-structured problems are solved.

Following Suchman (1987), Dreyfus (2002) and Hatchuel (2002), Dorst (2006) proposed a rethinking of ill-structured problems as ‘paradoxical design situations’, consisting of many ‘conflicting discourses’. For him, design problems do not exist out there in the world but are situated in the local design context (Suchman 1987), as constructed by the designer himself. Such paradoxical situations cannot be solved by means of calculations, as well-structured problems can. Dorst (2006) argued that paradoxical design situations can be solved by redefining the problematic situation until a solution is developed that transcends or connects the different discourses. The co-evolving of design problems and solutions until “a matching problem-solution pair” is obtained (Cross 2007: 102), has become a more generally accepted approached. This approach finds support in the work of Schön (1983), Kolodner and Wills (1996) and Lawson (2006), among others.

New insights on the nature of contemporary design problems have been put forward by Rittel and Webber (1973), when they argued that planning problems are wicked problems. Churchman (1967: B-141), in an editorial for Management Science, referred to Rittel’s description of wicked problems as a “class of social system problems which are ill-formulated, where the information is confusing, where there are many clients and decision makers with conflicting values, and where the ramifications in the whole system are thoroughly confusing.” The notion of wicked problems gained popularity in design following Buchanan’s (1992) paper.
Wicked problems are, like ill-structured problems, difficult to define and lack a predetermined set of rules on how to approach them (Coyne 2005). However, Buchanan (1992) argued that wicked problems differ from ill-structured problems in one fundamental way. Ill-structured problems are undeterminate, to be made determinate by the designer as s/he attempts to solve them. Wicked problems are indeterminate, meaning that “there are no definitive conditions or limits to design problems” (Buchanan 1992: 16). As such, wicked problems can never be made determinate and solved once and for all. Any solution to a wicked problem will generate new problems that need to be addressed. The process is continuous, the design is emergent. The indeterminacy of wicked problems is illustrated by the 10 properties put forward by Rittel and Webber (1973, as cited in Buchanan (1992: 16):

1. “Wicked problems have no definitive formulation, but every formulation of a wicked problem corresponds to the formulation of a solution.
2. Wicked problems have no stopping rules.
3. Solutions to wicked problems cannot be true or false, only good or bad.
4. In solving wicked problems there is no exhaustive list of admissible operations.
5. For every wicked problem there is always more than one possible explanation, with explanations depending on the Weltanschauung of the designer.
6. Every wicked problem is a symptom of another, "higher level", problem.
7. No formulation and solution of a wicked problem has a definitive test.
8. Solving a wicked problem is a "one shot" operation, with no room for trial and error.
9. Every wicked problem is unique.
10. The wicked problem solver has no right to be wrong—they are fully responsible for their actions.”

Buchanan (1992) kept Rittel and Webber’s original vocabulary of ‘problems’ and ‘solutions’. This has limited our vocabulary to talk about wickedness not as something to be solved, but as something that can only be advanced one step at a time. Therefore, it is these very notions of ‘problems’ and ‘solutions’ that need to be reconsidered if we are to move away from design as problem solving in our exploration of designing without a product. In this section, I propose a reconsideration of ‘design problems’ as ‘wicked constitutive entanglements’. In the next section, I will propose a rethinking of ‘problem solving’ as ‘advancing constitutive entanglements’.
As the employees of the Amsterdam Museum experienced as well, the world is becoming more and more complex, itself an outcome of the constitutive entanglements between people and interactive technologies (Orlikowski 2007). As Buchanan (1992: 15) argued, in contemporary designing “there is a fundamental indeterminacy in all but the most trivial design problems.” This has significant implications for contemporary designing, for designing ‘at the scale of life’ (Jones 1980), where designers no longer confront themselves with determinate problems which have definite conditions.

I illustrated above how the design space of the Amsterdam Museum is a constitutive entanglement, an assemblage of diverse human and non-human actors (Orlikowski 2007, Latour 2005). And here lies the wickedness of the project, illustrated by a number of observations, which substantiate some of the 10 properties of wicked problems put forward by Rittel and Webber (1973):

First, simply adopting interactive technologies in the museum practice will not, by itself, transform the museum into an online and offline meeting place. The entire assemblage needs to be taken into account. All actors need to be mobilized in bringing about sustainable organizational, technological, financial and attitudinal transformations in the museum. As one employee of the e-culture department argued:

“This is always a discussion, how to get people working together. If you look at the online community, it is a very large group which is involved: it’s us the e-culture department, the web-designers, the visitors of the site, the people in the museum…if such a group is to work they need to feel involved, concerned with the museum. The museum needs to encourage that. It should also make it possible that people from the community get access, that they and their stories literally get access in the museum, in exhibitions and events and that people are open for this. This goes through all the layers of the organization, the environment needs to change if the community is to work, otherwise it is not a community but an old-fashioned members group.”

Second, as the museum continues to open up to the new public and the new way of communicating and being in the world, more and more human and non-human actors will enter the assemblage and would need to be considered: more interested members of the
public, more stories, more information technologies, more financial bodies and more historical objects in the museum’s collection.

Third, not only the number of actors will change, but also their roles in the design process. Already, some interested members of the public become very active in the museum as volunteers, working side by side with the museum employees in preparing exhibitions, in cataloguing the museum’s collection or in organizing community activities in different neighborhoods of Amsterdam. Other actors become temporarily important and influential, only to recede in the background on other occasions. For instance, in preparing the exhibition ‘Johan and I’, the public and their stories were central to curators and project managers. Yet, as soon as curators moved to preparing an exhibition on the Golden Age of Amsterdam, the public’s stories were not as relevant as the museum collection. The challenge in the museum is to bring public stories and the museum collection in an assemblage in which they can both enrich each other and present a more interesting story to the public:

“If you want the past to be in the service of the present, then you have to come up with means that people feel attached to and for that you need not only museum objects but also that you take care that the objects would unfold and thus become more interesting by attaching more understandable stories to people, and going so far that people can bring in their own stories.”

As both the number and the roles of the different actors engaged in the assemblage continue to change, there will continue to appear ever new assemblages that need to be taken into account: new audiences, new funding, new collaborations. Designing will be slower, and riddled with even more debates than before. Stabilization becomes more difficult than ever.

Fourth, the different actors involved have different worldviews, different expertise and even different interests in the project. Differences can no longer be managed following the ways of traditional project management. The manager of the e-culture department explained her changing role when she argued that “as a manager you can no longer influence the whole conversation, or dictate the direction in which things should go”. She argued that a more decentralized way of managing is required, in which people can take initiative and organize themselves. As a manager, she is no longer a decision maker, but a designer who creates an environment where people are not afraid to contribute their ideas. As manager-as-designer
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(Boland and Collopy 2004), the manager cannot design the future, s/he can only design for the future. As such, managers-as-designers would always be one step behind the actions and interactions of their employees and their collaborators. In her words:

“The first thing is that you need to know that you only can facilitate, you cannot really make it happen, you can only make the environment and the way you act so that you almost invite the process to happen. […] Traditional project management doesn’t fit this way of working. Now I can’t give a set of specifications because I don’t know them yet. I will know the specifications when I am working with the group. And that’s difficult because in a museum people are used to making exhibitions, and their work kind of stops at the moment the exhibition opens. But if you make an exhibition that wants people to interact then the work is almost just starting when the exhibition opens and it’s ending when the exhibition is closed or even later if the community stays alive as in Memories from the East. So it’s a whole new way for people to be involved in the process.”

Fifth, there are no established ways to deal with the museum’s particular entanglement. Everything is new and unique. Following the example of other city museums that went through similar changes, such as the Museum of Liverpool, also a museum focused on engaging the public through storytelling, or the Santa Cruz Museum of Art and History (Simon 2010), which developed fascinating participatory programs, does not seem to help in every situation. Contrary to Rittel and Webber’s (1973) argument, the museum employees’ work was characterized by a lot of trial and error. Offline, some exhibitions were successful and engaged many members of the public in storytelling. Others were less successful and faded away. ‘Some things work and attract the public and others don’t; and you don’t know what until you try it’ one community manager explained. The museum director made a similar argument when he expressed his feeling of working like a pioneer:

“And it is very interesting because everybody is trying to invent the wheel, nobody knows exactly how it works, everybody is trying. There is a lot of effort that is going into the air. And we have best cases, and we try best cases from Liverpool and it doesn’t work, oh no, because it’s different…So we are really developing like pioneers.”
Sixth, the outcomes and effects this project could have cannot be predicted beforehand. What the museum employees and their collaborators are doing, is putting the basis of a very different way of being a city museum. They are not only redesigning the Amsterdam Museum; they are redefining the very idea of what it means to be a city museum. Its effects at the societal scale cannot be underestimated, ranging from the ways in which the public perceives, engages with and relates to museums in general, to the ways in which money is brought in museums or to the community relevance of museums.

This increased wickedness of the world, as seen in the Amsterdam Museum case, demands a reconsideration of designing as problem solving. The situation the museum employees are confronting themselves with cannot be solved once and for all. There are no available strategies on how to engage this entire assemblage, this constitutive entanglement, how to mobilize it towards a museum as an online and offline meeting place. There are no fixed solutions for developing a welcoming online community, or for encouraging and fostering the public’s participation online and offline, or for making museum employees comfortable in giving up their knowledge authority and in accepting the public’s insights are equally valid. Such issues can only be advanced, one step at a time, with one stabilization of this assemblage being the starting point for a new issue, a new assemblage, a new round of designing.

**Designing as advancing constitutive entanglements**

Theoretical examinations of problem solving in designing products, have presented the design process as one in which designers need to identify the requirements of the product, analyze them and develop solutions that would meet these requirements (Simon 1969, Lawson 2006, Cross 2007, 2011). Such examinations present a design process in which designers work towards reducing complexity, calculating parameters, evaluating possible solutions, excluding those that are improbable to solve the problem and limiting attention on those alternatives that could, in the end, offer an optimal, feasible solution (Dorst 2010, Lawson 2004). When we look at the Amsterdam Museum project however, we see a wicked situation in which every design move leads to an expansion of complexity, with ever new actors entering the design process, and ever more opinions and possibilities needed to be considered.
Wicked situations have no clear cut solutions, they can only be advanced. This is visible at the Amsterdam Museum but also outside of it. Think for instance at the difficulties politicians and other non-governmental bodies encounter when they try to address global environmental issues (Latour 2004, Washington 2013), or the lack of education among poor children, or when they try to eradicate world hunger. Eradicating world hunger is not a matter of producing more food, but it also raises issues of distribution, of political and economical stability, of social hierarchies and cultures of donations (see Bassette and Winter-Nelson 2010).

Similarly at the Amsterdam Museum, transforming the museum into an online and offline meeting place cannot be achieved by simply developing an online community or implementing interactive technologies in the museum practice (Maris et al. 2012, 2013). The infamous adage in website development “Build it and they will come” is no longer valid. Relationships and roles need to grow. The public’s participation in museum’s online and offline activities cannot be expected to happen by itself, it needs to be inspired and facilitated (Simon 2010). The museum employees cannot be forced to assume new roles, of communicators with the public rather than educators of the public, of co-producers of stories rather than official story tellers (Odding 2011). They need to have the time to grow in these roles, they need an organizational culture that encourages the development of such new roles and they need material arrangements that support such new roles, like the online community, interactive exhibitions or neighborhood events. The new Amsterdam Museum as an online and offline meeting place is a work in progress, a continuously emergent design. It is advanced one uncertainty at a time.

**Designing for emergence**

Recent studies on organizational designing offer insightful ideas for conceptualizing designing in emergent situations like that of the Amsterdam Museum. Boland and Collopy (2004) argued that in current, dynamic organizations managers are as much decision makers as designers. They proposed a distinction between decision attitudes and design attitudes. Decision attitudes favor a situation in which the manager has ready at hand a set of alternative solutions from which he chooses the best one. Design attitudes drive the manager to invent the best solution. In contrast to the idea of the manager as able to easily understand the design
problem and foresee – by means of calculation – the outcomes of his design decisions, Boland and Collopy (2004) underlined the uncertainty and indeterminacy managers as designers confront themselves with. A design attitude does not take a design problem for granted, but starts by questioning the way the problem is represented. While problem solving remained central for Boland and Collopy (2004: 10), they argued that what is important is that it “remains liquid and open, celebrating new alternatives as it strives to develop a best design solution”.

A similar argument was put forward by Dunbar and Starbuck (2006) who argued that researches are making a shift from ‘a focus on fit’ towards ‘emerging fits’. Carroll et al. (2006), following a study of designing a new organization at NASA, looked at the importance of discovery and refinement in organization designing processes and how they are influenced by the design tools used in the exercise. Garud et al. (2006) also underlined the importance of emergence and generativity in the organizational designing of the current, global organizations. In contrast to Boland and Collopy (2004) however, for Garud et al. (2006) the manager is not the only idea generator in the organization. Rather, ideas come from multiple ‘generative engagements’ that take place both inside and outside the organization. Looking more at the design process itself rather than the work or visions of individual managers, Garud et al. (2006: 277) voiced an increasing concern in current organization designing literature: “how can organizations be designed to transform themselves even as they continue to perform seamlessly on a day-to-day basis?”

Schreyögg and Sydow (2010) share this concern too. They even condemned those approaches that focus too much on organizational fluidity and argue that they lose the very essence of organizing. In response to this concern, both Garud et al. (2006) and Schreyögg and Sydow (2010: 1251) proposed approaches that balance ‘the conflicting demands of organizational efficiency and fluidity’. Schreyögg and Sydow (2010) argued for the importance of continuously maintaining organizational boundaries and identity by establishing ‘action patterns’ that distinguish the organization from its environment. Garud et al. (2006) emphasized the importance of seeding organizational elements such as people, technologies, processes and governance with ‘generative properties’. Designing for emergence implies recognizing the incompleteness of organizational acts (Siggelkow and Rivkin 2005, Schreyögg and Sydow 2010), and paying attention not only to what drives the organization...
but also to what drives the employees’ to engage, share knowledge and create new things together (Czarniawska 2004, Garud et al. 2006).

These studies on organizational designing are very helpful in conceptualizing the design work done at the Amsterdam Museum. Here too, the museum employees confront themselves with the challenge of designing for emergence, while at the same time continuing their activities so that the public can still come to the museum. However, there is a difference in how these studies approached organizations and how the museum employees approached their museum. The museum employees relate to their museum not as a collection of separate, independent entities that need to be coordinated into an emergent design by a manager or a group of managers. Remember the e-culture department manager above who argued that she can no longer control the number of actors engaged or the direction in which things are moving in the museum. Rather, they approached it as a constitutive entanglement in which coordination needs to be constantly performed by all the actors involved, both human and non-human, and in which alternative emergent designs are possible.

Knowing that things can always be different, that different emergent designs are possible, the museum employees are looking for various ways in which they can keep the process open. “You never know beforehand what's going to happen so you must leave things open”, as the manager of the e-culture department argued.

Designers’ ways to keep things open and foster advancements

There are different strategies the museum employees and their collaborators employed in keeping things open and fostering advancements. Somewhat similar to what Garud et al. (2006) and Schreyögg and Sydow (2010) proposed is a strategy which a museum employee coined as “implementing mechanisms that feed themselves”:

“There is always the idea that one person can grab the world and I think that the world is much too complex for that so I try to make surroundings where you can let things happen decentralized. I am not the only person who thinks that, that if you want to make things happen in a very complex surroundings you need to implement mechanisms that would kind of feed themselves.”
One such ‘mechanism that feeds itself’ is the idea of treating everybody in the project as equal partners. Hierarchical levels in the museum are reconsidered towards more horizontal ways of working. Work begins to be organized in projects, with employees from conservation, communication, financial and marketing departments working together in organizing exhibitions or other events. Also among the museum employees and the public, the aim is to find ways in which they can engage together online and offline as equal partners in telling the story of Amsterdam. It is argued that as people and their objects are treated like equal partners, they would be more open towards taking tasks into their own hands. For instance, the members of the online community would take over the management of their online groups, they would begin their own topics of discussion alongside those raised by the museum or organize their own events online and offline in neighborhoods. The manager of the e-culture department explained her design theory for fostering advancements in the following way:

“I think this is only possible if you treat everybody as equal. You can only leave things open if they can act responsible and I think that people will only take responsibility if you treat them, well, as responsible people and that means if you treat them like equals. That’s a bit the theory behind it.”

Another ‘mechanism that feeds itself’ is encouraging the public and the employees to become committed to the museum. This can be achieved by facilitating that the public and the museum employees can work together on projects of shared interest. One example given is that of a group of volunteers who are very passionate about textiles and who work together with the museum employees in caring for, maintaining and documenting the museum’s collection of textiles. The argument goes that as the public is encouraged to engage more closely with the museum’s collection, as in the case of the textile volunteers, they would become more committed to the museum as ‘through their work, they invest themselves in the museum’s collection’ as one curator explained. A committed group of volunteers would continue their work for the museum, would encourage their friends with similar passions to engage, and would enrich the museum’s collection or knowledge base as they engage in research or storytelling.
And another ‘mechanism that feeds itself’ is making that the local community can continue on its own the projects the museum started for it. That implies identifying and connecting with what the museum director called ‘the community builders’. The director gave the example of the Neighborhood Shops project the museum initiated in Amsterdam. Some of the shop owners that participated in the project became so enthusiastic about it that after the project ended, they continued to collect stories and personal objects reflecting the changing roles of neighborhood shops. In this way, the museum’s ambition of making people aware of the value of neighborhood shops in connecting and sustaining the local community was continued by these community builders. The director explained this mechanism for fostering advancements in the following way:

“In such community projects, it is very important that it is not a hit and run action of yours, but that you are successful in a way that it continues without you. So you think of a project together with the people who are going eventually to continue your project. And then you build the whole project and you help them with the big machine you have and when the big machine goes they still have to go on with their small machine. Maybe they are even more successful that way, and the project continues without you.”

Besides this strategy of ‘implementing mechanisms that feed themselves’, the museum employees managed to keep things open by embracing uncertainty rather than trying to reduce it. One of the qualities of designers working in wicked situations is that they are able to embrace uncertainty and turn it into a source of inspiration and learning (Cross 2011). This was particularly visible in preparing the ‘Johan and I’ exhibition. The project manager of this exhibition explained the thrill of ‘not knowing what you get’ when he asked the community members to contribute their stories of their encounter with Johan Cruijff. This is the world upside down for a museum, he explained, as the preparations for an exhibition do not start with physical objects from the museum collection but with the expectation of obtaining insightful stories from the public. The uncertainty of not knowing what you get, inspires the museum employee to think of new, creative ways to attract good stories, or to do something different altogether in preparing the exhibition. In the worlds of the project manager:

“Normally you have an object and it’s from the 17th century and you know how you are going to combine it to form a sort of red line through your exhibition. But now we
don’t have that, we still have to figure out what the results will be in two months of search for stories. Maybe it will be disappointing and then we have to be creative, ok what are we going to do? […] Now we say “if we don’t have objects, we still tell the story” and that is the world upside down for a museum. If I talk to curators, and I say that this story needs to be told, then they say “yes, but we don’t have a collection.”

In preparing exhibitions and other offline and online events, the museum employees adopt a ‘design attitude’ (Boland and Collopy 2004) which allows them to explore, together with their colleagues, the different possible alternatives they could follow in creating an open and interactive museum environment. In their work in wicked situations, designers are more like choreographers than decision makers. Choreographers are constantly thinking of new dances, new and inspiring arrangements of music, movements, dancers and decor. New music, or a new dancer, or a new decor can inspire new choreographies, that would lead to new dances altogether. Designers like choreographers, work at developing new ways of being and doing things together. That’s also their motivation and challenge, of how to create environments where people and the objects they work and live with can flourish together in new, inspiring entanglements.

Just as choreographers are part and parcel of their dances, so too designers and those living with the designed are part and parcel of their designs. Change is not as designed, conceived or made by a genius designer (Jones 1980). Change is also mediated, co-created, re-interpreted and re-valued by those who live with it. Hence, the designed is always emergent, advancing as those who live with it continue to translate, reinterpret and reenact it. Designing as advancing is not a goal oriented activity, directed towards meeting an a priori defined propose. Rather, it is an end in itself, a ‘shared imaginative living’ (Jones 1980) in which the designers, the designed and the practice of designing are constantly enriching each other.

When the translation, reinterpretation and reenactment stop, the advancement stops too and the designed becomes stabilized as a black box. That is what happened to Peter B. Lewis Building, designed by Frank Gehry for the Weatherhead School of Management, Case Western Reserve University (Boland and Collopy 2004). Now that the building is finished, the design is stabilized and it tells us little of the many actors that were involved and the many uncertainties and controversies they experienced. The new Amsterdam Museum is still in
concluding, new art, new employees, new technologies, new stories from the public bringing with them new questions to be addressed (cf. Knorr Cetina and Bruegger 2002).

Conclusions

In this chapter, I explored the uncertainty observed in literature and practice on the nature of design problems in contemporary designing. Our understandings of design problems and how designers engage with them, has been dominated by the design as problem solving paradigm. In this paradigm, design problems are presented as stable, structured or ill-structured for which solutions can be developed by means of calculations, abductive thinking or creative insights.

I argued that in designing without a product, the design as problem solving paradigm does not do justice to the wickedness and complexity observed in practice. The design situation at the Amsterdam Museum is not a design problem with clear boundaries, known number of actors and clear requirements. Rather, it is a collection of issues raised by a wicked, ever expanding entanglement of human and non-human actors which all need to be taken into account in designing. The Amsterdam Museum is not unique in that sense, the entire world is becoming more and more wicked. World challenges such as fighting terrorism, eradicating world poverty and dealing with global warming indicate the increased wickedness of the world as well as the immense difficulty it raises in dealing with such issues.

I argued that wicked situations cannot be solved, they can only be advanced. Working in wicked situations raises the important question of how to stabilize discussions and disagreements so that the organization can continue to provide its services while at the same time not closing the discussions too soon, as that could limit the number of possible alternative designs (see also Garud et al. 2006 and Schreyögg and Sydow 2010). I illustrated how the museum employees deal with the stabilization-openness challenge by means of two strategies: implementing mechanisms that feed themselves and embracing uncertainty by adopting a design instead of a decision attitude.

In the next chapter, I continue the exploration of designing without a product by following the actors further in their moves of advancing the Amsterdam Museum towards an online and
offline meeting place. I explore issues of design knowledge and creativity and illustrate how the designers at the Amsterdam Museum engage in designing not through individual design thinking but through collective taste making.