

P / REFERENCES OF DESIGN

SENSE OF POSSIBLE: A DESIGN PROCESS MODEL BASED ON EFFECTUATION AND SENSEMAKING.

Ilkka Kettunen*^a

^a Savonia University of Applied Sciences, Finland

* ilkka.kettunen@savonia.fi

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ABSTRACT | In this conceptual article, I propose a new design process model based on bricolage, sensemaking theory, effectual thinking, and Donald Schön's idea of reflective practice. The design process is the most researched topic in design studies, and introducing a new perspective is challenging. As the design paradigm undergoes a shift and the role of the designer transitions from being merely an expert to becoming more of an enabler, it becomes imperative to explore the ways in which designers engage with innovation. My experience suggests that rational and linear normative models do not support constructive design thinking through practice. Reflective design process models, on the other hand, may struggle to guide what should be done in each situation. The designer's "superpower," however, lies in incorporating embodied and intuitive expertise into rational innovation activities within an organization. What new insights can sensemaking and effectual thinking bring to normative design thinking? What does a constructive design process look like when removing rational-analytic elements to make room for designer-like intuitive actions? The contribution of the article is to complement those previous perspectives where design and its practices are linked to the pragmatic paradigm. Design can be described as a visually and materially oriented embodied imaginary service that utilizes imperfect information to integrate meanings for the future. The result can be an unpredictable, surprising, and unique concept. A design process that involves stakeholders in innovation progresses through the integration of stakeholders, imagination, action, reflection, and learning towards achieving a common purpose.

1. Introduction

The role of the designer in innovation activities can be summarized as follows: developing new, unexpected solutions, tolerating uncertainty, working based on imperfect information, applying imagination and constructive anticipation to practical problems, and using drawings and other modeling tools in problem-solving (Cross & Clayburn Cross, 1995). Roberts (2023), drawing on Rittel and Webber's (1973) ideas, lists various general problem-solving strategies as follows: competitive, authoritarian, rational-analytical, taming, and collaborative. In addition to these, a design strategy is also possible for approaching wicked problems.

In design research, two ways of doing design stand out: the linear “rational” model prevalent in product development and innovation activities, and the constructive, reflective model based on Donald Schön's (1983) ideas of design as an intuitive, dynamic, and iterative process. The rational model sees design as one phase in a linear process, whereas the reflective model sees design as an active process throughout the entire innovation process. In this article, I start with this binary framework, where on the one end of the spectrum is a positivist-managerialist worldview and another end is a critical-constructionist (Tienari & Meriläinen 2012) worldview (Figure 1). The vertical axis of the figure represents design practice done independently versus collaboratively.

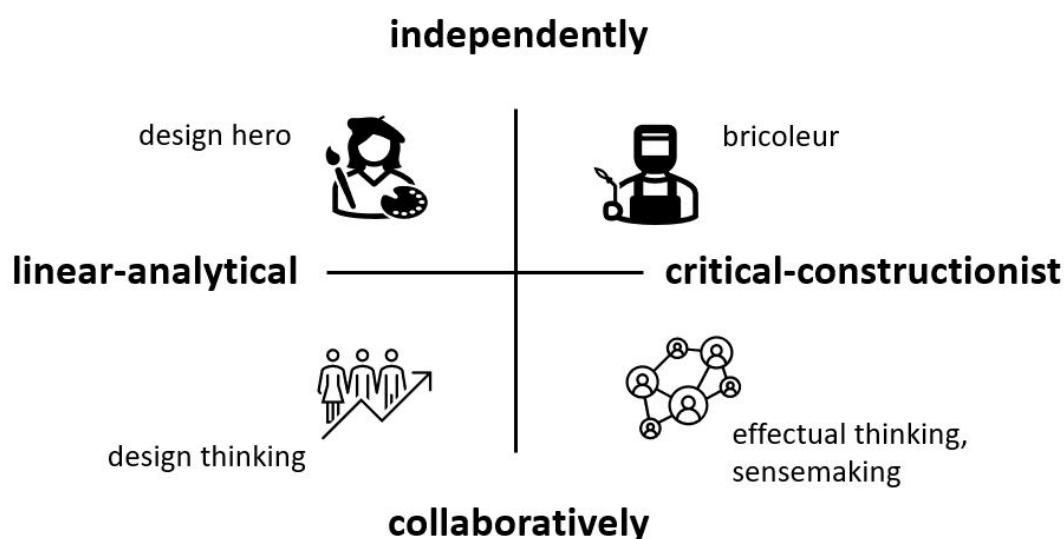


Figure 1. Designer's worldviews: rational-analytical versus critical-constructionist.

My aim with this conceptual article is to contribute to the discourse on the constructionist worldview of design, complementing Schön's reflective perspective with insights from bricolage, sensemaking, and effectuation. This article addresses two questions:

How can design be understood and defined from the perspectives of effectuation and sensemaking?

How can the approach of bricolage, effectuation and sensemaking to design be formulated into a normative process model?

2. Theoretical Framework

2.1 Rational-Analytical Design Thinking

There are dozens of versions of rational models available for the development of new products (look at, for example, Dubberly, 2005). These models typically involve progressing from defining goals and problems to generating alternative solution proposals, then refining and testing them. These normative models are used to guide and manage the creative process in time-bound product development. Interdisciplinary product development teams and novice designers benefit from clear guidance on how to proceed in situations requiring open-ended creativity.

Criticism towards these models has been raised regarding their failure to account for the designer's intuitive thinking or the significance of the social aspect of the design process. Rational models are based on the idea of a predictable future towards which one progresses through consciously planned stages. Over the past decade, the term “design thinking” has gained significant popularity, as it provides an easy way to describe the contribution of designers to product development and innovation activities.

Design thinking is understood to refer to the use of design-oriented approaches in the discourse of business, management, and even social innovation. Books on the subject are often referred to as manuals, toolkits, workbooks, or playbooks, offering how-to guides for design thinking. The term has allowed design or business consultants to capture, commercialize, and trivialize design into a few methods, tools, or process models.

Some design researchers criticize the use of the term “design thinking” to describe this mechanized process, which diminishes the broad knowledge, skills, and expertise of professional designers. Critics argue that mechanical design thinking produces highly conservative thinking and may even make genuine innovation and real change impossible. Thus, design thinking can be seen as belonging to the rational-analytical category, at least in terms of how it is often taught and applied in business settings. Design thinking is just a new name for the old “rational-experimental” approach to problem-solving (Iskander, 2018).

Kimbell (2011) argues that design thinking suffers from several issues: 1) it relies on a dualism between thinking and knowing, as well as acting in the world, 2) generalized design thinking does not depict the diversity of designers' practices, and 3) the designer is seen as the primary agent in design. According to Kimbell, attention should instead be paid to the situated, embodied routines of designers and others.

The activity that occurs in the professional practice of design, in studio work, could be referred to as designerly thinking (Cross, 2023). It is based on thinking through making, intuition, alternating between divergent and convergent thinking, and perhaps empathy. This also includes designerly practices, interventions, interpretations, discourse, as well as linear, artistic, and bricolage-type approaches. Designerly thinking is also not something that can be mastered by reading a workbook, attending a seminar, participating in a one-day workshop, or completing a Design Thinking MOOC course.

2.2 Reflective Design Practice

Donald Schön's (1983) book “The Reflective Practitioner” introduces the design process as reflective action, providing an alternative to rational models. Schön was influenced by the thinking of John Dewey, who argued that habitual action and intellectual reflection occur simultaneously: in competent action, thinking happens precisely within the process, not outside it. The designer creates a situation according to their understanding, and the situation “talks back.” The designer shapes their own environment and must react to it, thus engaging in reflection-in-action. This dialogue often takes place, for example, through sketching and model-building. Action can lead to unintended, even surprising consequences. By reflecting, the designer learns more about the design subject and their own actions, evolving as a designer.

Schön's reflective perspective overlooks the bodily and social dimensions of design activity, including design activities that occur within an innovation-producing organization; the designer often engages in conversation with others simultaneously with the situation. Schön's ideas have also been criticized for presupposing a negative starting point – a problematic situation. However, a designer can act even in the absence of a problem.

The reflective model is descriptive, depicting, and does not instruct novice practitioners on what to do in a situation or how to progress in creative problem-solving. According to the model, one must do something to reflect on their actions. Where does this impulse, this pre-understanding of action, come from?

2.3 Pre-Reflective Thought

Rylander Eklund, Dixon & Wegener (2023) propose – based on the thinking of John Dewey – that pre-reflective thought forms a continuum with reflective thinking (as per Schön's reflection-in-action). Design practice is seen as regular participation in conversations with one's own actions and others, combined with pre-reflective “design artistry.” Observation and imagination skills are central here, and the designer develops these skills through sketching and model-making, seeking cues from the environment. Imagination relies on sensations, emotions, and meanings, which together form something new.

The results of observation and imagination cannot be seen in advance, so the designer must immerse themselves in a state of uncertainty, focusing on constructing present meaning through sketching and model-making. Over time, these techniques can be seen to cultivate the designer's “adventurous attitude,” where awareness of the environment and sensitivity to impulses grow. Design studio practices, imagination, and improvisation – starting from imitation of more experienced designers – develop the designer's sensibility, which is a key essential skill for the designer (Rylander Eklund, Aguiar & Amacker, 2022).

Designers should not only reflect introspectively but also interact with colleagues. Outward-facing reflection brings together the collective perspectives of collaborating individuals, generating social, political, and emotional material. Parties learn together and form a collective understanding of what is desired (Tan, Kocsis & Burry, 2023). Social practices in studio design shape the collective sensemaking of the parties involved in producing innovation: efforts to build equal peer relationships among stakeholders, openly presenting sketches, facilitating collaborative composition, and continuously narrating the ongoing design process, critically reflecting on the design task given at the beginning of the work (Kettunen, 2014).

2.4 Bricolage

Schön (1983) proposed that architect Quist has constructed a repertoire from examples, images, understandings, and actions encompassing material from various circles of design. It includes places he has seen, buildings he knows, design problems he has encountered, and solutions he has produced. All these are part of his repertoire, insofar as they are available to him for understanding and action. The repertoire is a concept very close to that of the bricoleur's stock of materials.

Bricolage is about tinkering, building, and assembling. It is a concept developed by Lévi-Strauss (2004) for the activity in which a “bricoleur” uses whatever materials are at hand to solve a problem through improvisation. It is an event where the maker wants to express themselves and their identity by using whatever material happens to be available and by creating various signs from different contexts. Materials can be physical, mental images, solution patterns, or social cues.

Louridas (1999, p.522) argues that “design in all its forms is a form of bricolage.” Design is not equivalent to bricolage, but we can look at design like bricolage. Weick (2001, p.62) states that designing is synonymous with bricolage, and the designer acts as a bricoleur: “Design is clearly a sensemaking process that gets by using whatever materials are at hand.”

The first practical step of the bricoleur in an inspiring project is retrospective. He examines what materials and tools are available before deciding which of them he will utilize to solve the problem. The materials, of course, refer to those he has used previously. The broader their use has been and the more widely they have been understood, the more innovative the bricoleur is in improvising new forms from his stock of materials. He doesn't know the materials because they were useful; rather, the materials are useful because he knows them (Weick, 2001). The bricoleur's thinking diverges from rational logical analysis and planned ways of thinking. The engineer seeks a solution from the universe, while the bricoleur searches for it in his own scrapyard. The engineer dissects and analyzes; the bricoleur reassembles (Louridas, 1999).

A designer becomes a bricoleur when he uses the means at hand to solve a problem, whether these means are concrete in model building or waste pieces or parts of other products found in the corner of the workshop in prototype construction, which have no connection to the product being designed. The designer also operates according to the bricolage model when he draws on his stock for solutions, ideas, and new assemblies. He uses as his stock images, shapes, methods, or solutions from other fields than the one in which he is currently working. The “materials” at the designer's disposal also include the forms he has encountered previously and which he can try to apply to new problems. In this case, the result approaches mannerism, which is a stereotypical, ingrained way of using familiar solutions.

Designers are known to continuously gather material and visual material as a background process for inspiration for new concepts (Keller, Pasman & Stappers, 2006). One conscious method is mood boards; these collections of images serve as stimuli and solution patterns from which the designer can pick parts for their own problem-solving (Baxter, 1995). This strategic skill of the bricoleur – wayfinding – is opposite to the pre-planned navigational strategy (Chia & Holt, 2009).

2.5 Effectual Thinking

Effectuation theory (Reed, S., Sarasvathy, S., Dew, N., Wiltbank, R., & Ohlsson, A-V., 2011; Sarasvathy, 2022), which has emerged in the discourse of entrepreneurship and business studies, also offers a potential perspective on interpreting design events; after all, there are many similarities between entrepreneurship and design. An entrepreneur shapes a company, continuing from where the product designer left off. Like the designer, the entrepreneur is interested in “what could be” (Nielsen & Christensen, 2014).

Managerialist leadership, including design management and partially design thinking, assumes that the future can be anticipated and approaches the future through analysis, strategic planning, and rational reasoning. Effectual thinking often views that the future cannot be predicted but unfolds as a result of our actions. These different logics are like oil and water. The effectual worldview describes the future as malleable and full of unforeseen opportunities, whereas the prevalent causal-rational analytical worldview in many professional contexts focuses on predetermined goals pursued through forecasting and reducing variations (Hanson, 2020). Causal logic considers how to reach the goal or vision. Effectual, or let's say interactive logic, asks what I can do, who I know, and what I want to do, and then begins to do something (see Figure 2). In the process, new parties, partners, who bring in new skills or new goals, come into play. Entrepreneurs do not know in advance where they will end up; they cannot act according to pre-defined strategies. The same applies to the designer who seeks something non-existent. The future is not found; it is made.

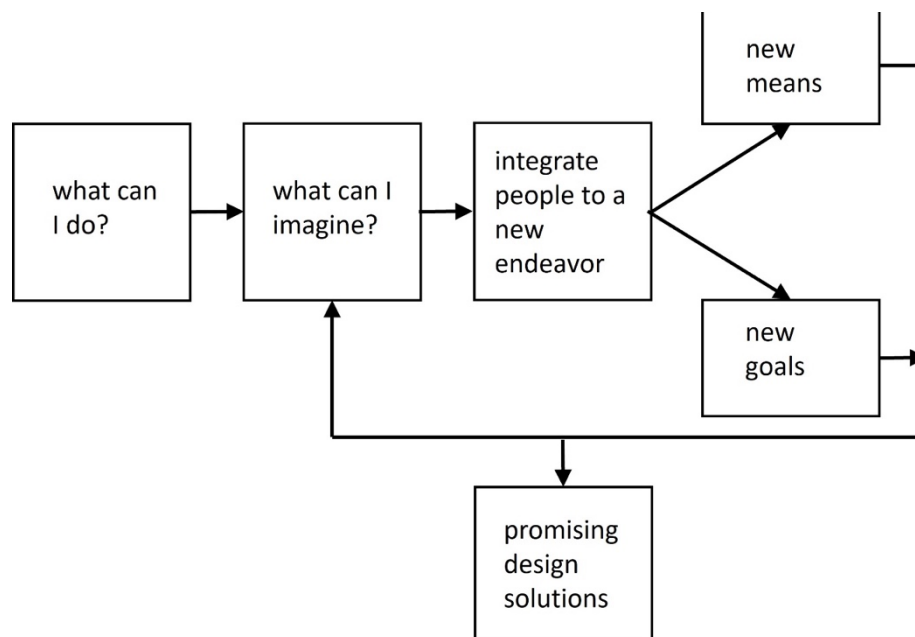


Figure 2. The Effectual Process (adapted from Reed et al. (2011) and Nielsen ja Christensen (2014)).

The model (Figure 2) illustrating entrepreneurship, appears familiar to the designer: that's exactly how design progresses. Its logic is guided by the available means and skills, and it materializes if the right people become interested and committed to the presented opportunities. One just has to start from somewhere, and you can't always know where it will lead.

Effectual partnership differs from causal partnership in the belief that those who decide to join the project and choose themselves to be part of it make the project what it is. This sharply contrasts with selecting partners for the project based on how they fit into a given goal. Effectual partnership shapes the project, and the project does not dictate the partnership. Metaphorically, an effectual project is more like a patchwork quilt than a jigsaw puzzle. In a patchwork quilt, there is a broader range of possibilities for solutions, whereas in a jigsaw puzzle, there is only one correct solution. Extensive patchwork projects are communal. Contributors bring their own perspectives, preferences, workflows, and means to the project and must adapt their work to others' contributions.

The willingness of partners/parties to commit to building the process is paramount—not their suitability for a predetermined vision or opportunity. Each participant shapes the vision and brings their own means and tools to its realization.

2.6 Sensemaking

The design process can be examined through the lens of sensemaking, popularized by Karl Weick (1995), to better understand what happens during the design process. Weick's roots of sensemaking lie in his attempts to understand the framework of organization process from a social psychological perspective, which is an alternative to the analytical view where an organization is seen as a rational entity (Helms Mills, 2010).

Sensemaking comes into play when a change in the flow of routines occurs, forcing us to think about what is happening and how we should act. In product design, sensemaking is emphasized, for example, when it becomes apparent that the world has changed so that current products are no longer selling. Now more than ever, the question arises: what is this situation all about and what should we do now?

Sensemaking involves continuous, backward-looking development of plausible images so that the images make sense of what people are doing (Weick, Sutcliffe & Obstfeld, 2005). Sensemaking is ongoing, with no beginning or end, but the efforts of sensemaking become clearer when the current state of the world is

perceived to be different from the assumed state. People break moments from the continuous flow of events and pick up clues from past moments, attempting to make things rationally explainable (Weick, 1995).

Sensemaking is primarily a conversational and narrative-based social process, manifested in negotiations, storytelling, rumors, and gossip (Brown, 2000; Brown, Stacey & Nandhakumar, 2008). Informal discussions serve as arenas for creating meaning, partially reducing the ambiguity that people experience (Engwall & Westling, 2004). Physical cues and signals, such as expressions, gestures, behavior, and actions, also help in making interpretations and assigning meanings (Balogun & Johnson, 2005).

The sensemaking process is a learning process and depends entirely on the learner's collective sum of knowledge, emotions, and past experiences, thus entirely depending on their perspective (Kolko, 2010). Another perspective is organizational sensemaking, a collaborative process in which people attempt to understand the situation and the best way to act in a changing, unclear, and uncertain environment.

Action is essential to sensemaking. Only when we say something out loud do we know what we are thinking. Only when we do something can we understand what it means. According to Weick (1995), we enact our environment productively. Reality appears as a continuous interpretation and updating of our experiences. We crave order, but reality gives us exceptions to prevailing rules, and these exceptions make us reshape our order (Minzberg, Ahlstrand & Lampel, 2009).

Simultaneously, *sense-giving* can affect both the actor and the target audience equally well. “When you hear yourself speaking, you see more clearly what is important and what you had hoped to say” (Weick et al., 2005, p.416). For designers, drawings and prototypes are also tools for sense-giving, albeit in a quite tangible form. The model provides others with the opportunity to create their own meaning, but at the same time, it “sells” the designer's vision. Designers often soften the direct selling of their vision by presenting multiple alternative solutions, allowing others to participate — at least in narrowing down the options.

Rylander Eklund et al. (2022) view sensemaking as the underlying logic of design practice, with improvisation and imagination being core activities of design practice, developing the designer's sensibility. The authors divide philosophical background assumptions into two paradigms: design as problem-solving and designing as sensemaking (Table 1). They depart from rational-analytical thinking about design as problem-solving. As an alternative paradigm, they offer designing as sensemaking, whose pillars are the designer's cultivated sensitivity, imagination, and improvisation.

Table 1. Perspectives on designing. Adapted from Rylander Eklund et al. 2022.

Design as problem solving	Paradigm	Designing as sensemaking
Cognitivism	Theory	Pragmatism
Deliberate, causal	Practice	Imaginative, improvisational
Cognitive operation	Creativity	Embodied, situated, social
Methods	Pillars	Sensibility
User experience	Empathy	Embodied experience of the designer
Tame chaos	Uncertainty	Embrace chaos
Problem solving as a cognitive act: methods essential	Experimentation	Sensemaking improvisational and imaginative: sensibility essential

Sensemaking begins in chaos, where the situation is unclear and ambiguous. What is this situation? What should we do next? The designer often cannot do anything but immerse themselves in the situation and start acting based on existing premises: sketching and ideating. In these situations, imagination is essential because it gives shape to unknown things, and its necessary *modus operandi* is improvisation.

3. Design Offering

Design is difficult to define because the perception of it is constantly evolving. Heskett (2002, p.7) proposes the task of design to be “to shape and make our environment in ways without precedent in nature, to serve our needs and give meaning to our lives.” However, this generic and human-centered definition does not fully convey what design as an activity can offer to innovation. I submit that there are six major principles of design: it is doubt and imagination-driven, based on incomplete information, is visual and material-making reliant, and future-oriented sensemaking service. Figure 3 summarizes the design offering based on reflective thinking, bricolage, effectual thinking, and sensemaking.

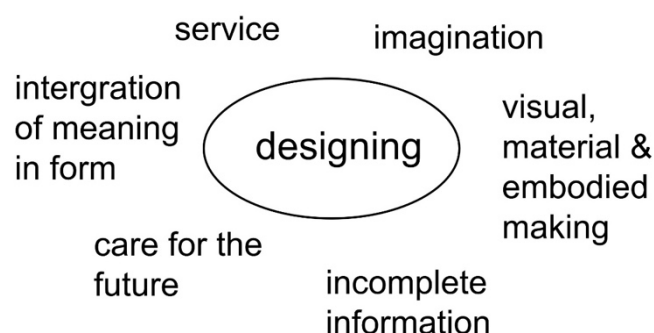


Figure 3. Summary of the design offering based on collective and constructivist worldview. Design is a service that arises from incomplete information, doubt, and imagination, producing sensemaking of the desired future.

3.1 Service

Design can be seen as a cognitive or technical performance, but also as a social activity within an organization. The stakeholders include the client who commissioned the design work, the company's management, marketing, product development, design team, partner and subcontracting companies, and external stakeholders - the end user. The discussion in design often focuses on consumer needs and behavior. However, the customer – the innovation producer – is the most important social contact for the designer. There is no design project without a client who pays the designer's fee and bears the risk of the product's success.

Design activity is a service relationship between the client and the designer. Whereas art and science are self-serving, designers serve others – a broader innovation process (Nelson & Stolterman, 2012). Design service differs from normal service in that it is not about helping the customer by creating something they know they want. The customer may not always fully know what they want from a new product. The designer must address and surpass the customer's often loosely defined goal of the desired outcome: “now that I see this, I know this is what I wanted.” It is not about finding meaning in the sense that an idea or concept would await its discoverer or inventor somewhere. The designer cannot ask the customer what this designed outcome would be, but must empathetically ascertain the customer's desires, which focus on the product's utility, form, and technology. The designer's role is to act as a midwife to the original desire, which could not have been imagined in the form realized by either the customer or the designer's individual actions, and deliver a result that is contradictory, unexpected. The outcome is something new to the customer, but they also recognize that it is suitable and useful for their own interests in a specific situation.

3.2 Imagination

Imagination is a basic human capability. When imagining, we bring forth images or concepts that are not real or present to our senses but appear in our mind's eye. The psychologist Lev Vygotsky views imagination as the basis of all creativity and “an important component of absolutely all aspects of cultural life, enabling artistic, scientific, and technical creation alike.” (Roberts, 2023, p.129)

Although imagination seems essential to the production of design, it has received little attention in design research. Imagination is often seen as a hidden source of creativity; designers often seek something not yet existing or never-before-seen solutions. The role of knowledge thus comes into the design process: how do we seek the new without simply repeating what already exists. Folkmann (2014) views imagination to be vital in design, as it is in all human thinking and creation. When we imagine, we obtain a visually oriented abstraction that can take us in new directions and lead us to examine new possibilities. Nelson and Stolterman (2012) maintain that in order to create something, one must have the ability to imagine what the something is and how it can be made real. Imagination is required within all fields and all phases of design. Gopnik (2010) suggests that the basis of knowledge lies in a lively imagination. Knowledge and imagination are not separate things. Indeed, imagination, or envisioning possible things alongside real ones, is a precondition for human culture as a whole, not just for artistic creativity and comparable special activities.

Folkmann (2014) suggests that the perspective of imagination can be a useful way to explore the construction of meaning in the design process; and how design objects are positioned, perceived, and conceptualized as tools for creating new meanings. Imagination not only materializes new forms of meaning like products and solutions, but it also reflects and integrates elements of the unknown. Therefore, a key element of the designer's work is to work on the invisible boundaries of the unknown as the designer creates something new and not yet existing.

3.3 Incomplete Information

The designer often has to work based on incomplete background information; it is not always clear *ex-ante* which pieces of information to pay attention to and which not to. The product or service to be designed may not have existed before this moment. Leaders may be unable to envision the future between technological developments and the significance-giving desires of consumers.

The rational-linear approach attempts to acquire and analyze information, anticipate possible futures. This information is fed into a predefined process assumed to generate new innovations. In contrast, the emergent (constructionist) strategy changes along the way; there are always multiple futures, and there is no information about the future, only predictive models. The environment and the actions of customers and competitors cannot be known for certain. Yes, some futures are more certain than others, but as a general rule, the more certain a future is, the less potential it offers for innovation (Compo, 2021).

The rational-linear approach seeks to analyze and define the problem and the goal as precisely as possible. This may succeed in taming problems, but according to Rittel and Webber (1973), for wicked problems, a definition is impossible: there is no stopping rule, all problems are unique, problems are the symptoms of other problems, the description of the problem defines the solution, etc.

On the other hand, as Sarasvathy (2022) suggests, the effectual problem space consists of at least three elements: 1) goal ambiguity - preferences are not given or well-organized; 2) it is not clear which environmental elements to pay attention to and which to ignore, and 3) calculating the probabilities of future consequences is impossible.

The effectual approach relies on the belief that a possible path will be found along the way; the most important thing is just to get started; there is no need for prediction, doing itself becomes the strategy.

Designers work on the things they can control. Goals may not be clear, but values, tastes, and preferences can all be means that guide action. Goals are not committed too rigidly. Design does not try to adapt to the existing environment; instead, committed parties create the environment themselves. This means that in concrete commitments with reasonable risk, the information that emerges is more important than previous background knowledge or feedback received. (Sarasvathy, 2022.)

3.4 Visual, Material, and Embodied Making

The designer's "superpower" in producing knowledge and material change is continuous, embodied, improvisational, visual, material, and social making – thinking through doing (Ingold, 2013; Nielsen & Stolterman, 2012; Bergen, 2009). Designers are makers; they sketch and build, giving form to ideas as solutions. They take that faint glimmer of possibility and make it visible and real to others. The designer sketches and builds models, ideates through bodystorming, and experiments with prototypes and service paths themselves. They display their sketches in the corridors of the workspace for everyone to see and can facilitate participatory, hands-on workshops for representatives from various parts of the organization. According to Krippendorf (2006), 80% of a designer's work is preparing and delivering various presentations. The designer also constructs their own workspace as part of their creative environment; space is a tool for sensemaking (Kettunen, 2014).

The brain operates in our bodies; movements, senses, and social interaction are crucial. The brain always seeks to predict the future, based on the past, it seeks a predictive coding model, forward-looking. Hari & Kujala (2009) talk about the action loop, where the brain in the body affects the world through motor skills, we receive sensory information, and action produces new information. Movement, motor skills, and doing is the driving force of everything. The senses are in the service of action. Knowledge is conveyed through movements. Motor skills are essential in human thinking, like sound and speech; insight requires motor action.

Design processes include embodied knowledge even in the cognitive and immaterial stage of creating mental images of the intended physical designs. Making may be seen as a way of negotiating meaning through interaction between the embodied mind and the material environment, thus it may affect intrapersonal growth and provide a useful platform in educational settings (Growth, 2017). The above sounds like Karl Weick's (1995) sensemaking theory, in which he says: "Only when I have said it do I know what I am thinking." In design, it would mean: only when I have built a model do I know what I am doing.

3.5 Care for the Future

Design is a future-oriented, purposeful activity, a conscious effort to seek the new. When a product or service designed by a designer is launched on the market, the designer has already moved on to the next product to be launched in the future. Instead of examining what is, the designer examines what could and should be.

The designer's initial visualization of the future may be a mood board, reflecting the desired style, quality, and user experience of the product under development. As the name suggests, with a mood board, the designer seeks to create and present a coherent image of the desired direction in which the development could lead.

An ethical attitude can easily be associated with the work of a designer, so in addition to asking themselves whether design provides a solution to human needs, whether it can make money, or whether it is economically feasible to produce, they should also, according to Wendt (2016), ask themselves: "Does this contribute to a future that promotes a positive existence for humans and their environment?" If not, perhaps it should not be designed (see also Roberts, 2023, p.267).

3.6 Integration of Meaning in Form

The designer integrates and creates the first visualization of the desired future. The designer then makes and gives sense. Of course, each participating person understands the visualization, model, or prototype through their own perspective and goals, thus differently, but the designer's concept can be the first concrete, non-textual expression, action towards the realization of the new. Nelson and Stolterman (2012) speak of the concept of desiderata (i.e., desires) as an inclusive whole, combining three approaches: aesthetics, ethics, and reason for that-which-is-desired.

Lee (2023) talks about the designer's role in our post-digital era as an enabler. Thus, the designer becomes an integrator, who in the stages of the design process seeks to consider different parties to ensure the progress of the project. Designers are integrators, “responsible for piloting company activities and identifying new potential segments” (Borja de Mozota, 2003, p.124).

4. Design Process

The designer's task shifts from offering a 'perfectly' finished product to becoming an enabler, continuous facilitator of incomplete possibilities and sensemaking (Borja de Mozota, 2020; Mortati, 2022; Lee, 2023). Rylander Eklund et al. (2023) call for the designer's sensitivity, which develops through the training of imagination and improvisation. Tan, Kocsis & Burry (2023) complement Schön's (1983) reflective idea with a pre-reflective 'designerly artfulness' or 'adventurous attitude', which helps the designer to become more attuned and observant to reality. The abductive process of design is triggered by an embodied experience of doubt, fueled by imagination (Misak, 2004; Rylander Eklund et al., 2023).

The proposed *Sense of Possible* model (Figure 4) has drawn influences from Kolb's (2015) *Experiential learning theory*, which describes how individuals learn by doing through four scenarios: active experimentation, concrete experience, reflective observation, and abstract conceptualization.

Somewhat surprisingly, Figure 4 resembles Resnick's (2018) model of the “*kindergarten approach to learning*,” which is characterized by a spiraling cycle of imagine, create, play, share, reflect, and back to imagine. Resnick's model contains almost identical elements.

The Figure 4 model also takes cues from Tan et al. (2023, 8) reflection cycle for designers. Both it and Kolb's experiential learning theory cycle are divided into two phases: designing phase and reflecting phase. This article's contribution is to complement the previously mentioned descriptive models with a bit more normative form and to link the phases of design and reflection to the perspectives of effectual action and sensemaking.

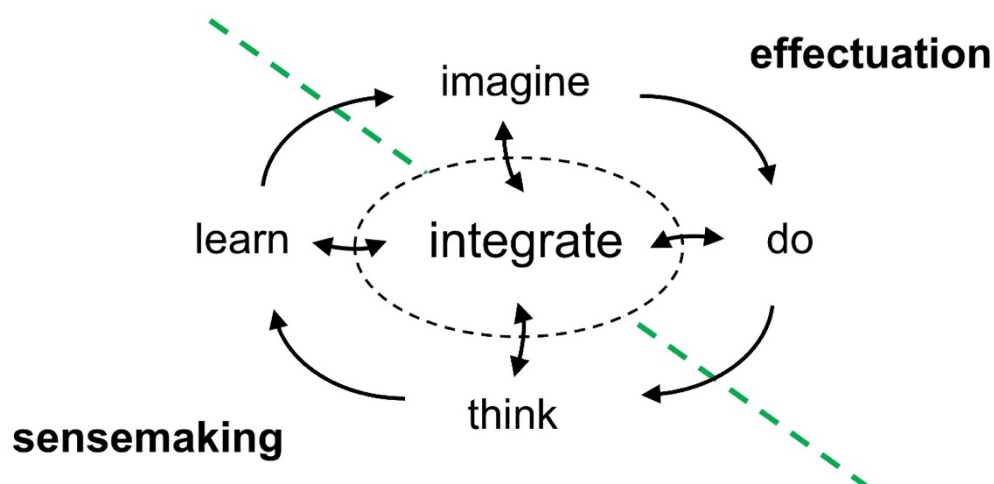


Figure 4. Sense of possible: the design process model based on effectuation and sensemaking.

4.1 Integrate

Design is fundamentally a social process (Bucciarelli, 1994). During the process, designers often perceive their work as both an outcome and a social interaction (Lufti, 2023). Designers are often seen as individuals within organizations who strive to seek, distil, and visualize what kind of innovation is desired. The social sensemaking practices in design, though, manifest in the continuous seeking of peers' input, presenting sketches, engaging others in design activities, and ongoing storytelling – focusing not solely on the outcome, but on the shared process leading up to the present and the near future (Kettunen, 2014). Designers integrate stakeholders to ensure the progression of the innovation process.

The myth of the solitary genius designer persists, but in practice, today's products or services are designed by teams rather than individuals. Designers interact with many people throughout the design process. These may include individuals close to the organization, such as customers, users, subcontractors, etc. Decisions about the direction of design are not made in a vacuum but rather within a social context.

A product that a designer creates exists only in relation to people. A product becomes real only when it is seen, used, interpreted, and owned by people. Designers must consider multiple stakeholders and collaborate with people from different professions. They need to become skilled negotiators who, perhaps through their visual expertise, naturally act as mediators between different perspectives.

Equality among project stakeholders – or at least the temporary illusion of it – is a necessary starting point for opening up and exploiting opportunities. As a designer, innovator, and entrepreneur, you must create opportunities for fruitful collaboration between your clients and various stakeholders. Innovation and business building are social processes; involving another person in the process is essential, as it is difficult to accomplish anything alone. New committed partners bring new means or new goals; you may end up somewhere you didn't know you were going.

Others often have a different way of understanding the situation or problem at hand. They bring not only their own knowledge but also their perspectives, assumptions, goals, and ambitions, making opportunity recognition, process of negotiation and consensus among parties.

4.2 Imagine

The design process can begin with doubt, criticism, and imagination. This entails a pre-reflective artistic design attitude, abductive reasoning, enthusiasm, and an adventurous approach, which materializes as thumbnail sketches and rough models or prototypes. The designer does not seek the right solution to the problem but may develop multiple viable solutions and pathways simultaneously. It can be said that the heart of design is the need to mobilize collaboration and imagination (Telier, 2011).

4.3 Do

Through making – sketches, models, and prototypes – the designer can now reflect (Schön, 1983) on their own actions and their outcomes, and invite stakeholders – colleagues, clients, etc. – to participate in making and reflecting. During the process of making, the designer simultaneously experiments and experiences the design action. Experimentation occurs when the designer makes a move in the situation, whereas experiencing happens when the designer understands how the situation has changed as a result of their actions. Reflection-in-action is iterative (Tan, Kocsis & Burry, 2023).

4.4 Think

Thinking occurs when the designer takes a step back from the situation to observe and reflect on their own actions. Sensemaking emphasizes reflection *on* design action (Schön, 1983) rather than the actual act of designing. At this stage, the designer thinks not only about the design of the product but also about their own design process, reflection-on-design-action. The outcome and the significance of the process (sensemaking) are always constructed retrospectively.

This stage must be distinguished from the previous two stages to avoid “analysis paralysis” (Tan, Kocsis & Burry, 2023). While engaging in design – intuitively, bodily, improvisationally, and imaginatively – the designer cannot critically evaluate their own outcome and actions because the delicate creative process may be stifled by analysis.

4.5 Learn

In this reflection-in-practice stage, the designer takes a further step back and considers how to shape their entire practice critically and conceptualizes a different approach for future design projects (Tan, Kocsis & Burry, 2023). If the designer does not learn from their own actions, if they do not change themselves and their actions through their reflection and thinking, they will end up repeating their mannerisms or mistakes – perhaps successfully – in the next project.

5. Discussion

My goal with this conceptual article is to introduce the discussion of design's constructive worldview, complementing Schön's reflective view with the dimensions of sensemaking and effectuation. How can design be understood and defined from the perspectives of effectuation and sensemaking, and how can the theoretical lens of effectuation and sensemaking be used to formulate design into a normative process model? However, this goal was not fully achieved. The presented model (Figure 4) is not a comprehensive normative guideline on how designers should proceed, but rather an encouragement for intuitive, artistic design action and justification for a designerly way of doing to other stakeholders.

Tan, Kocsis, and Burry (2023) proposed a reflection cycle model for individual designers, while Kolb (2014) introduced the experiential learning theory cycle. Both models consist of two distinct phases: the designing phase and the reflecting phase. This article aims to enhance these descriptive models by introducing a more normative framework and by connecting the stages of design and reflection to the perspectives of effectual action and sensemaking.

Effectuation is more a thought and decision-making process than a method, and its primary purpose is to help explain how truly entrepreneurial thinkers make decisions and create value in highly uncertain environments (Duening et al., 2012). Effectuation also fits well with describing a designer's action in a common situation where initial data and customer desires are not yet clear. Design thinking practices bring the cognitive principles of effectuation to life, it adds a normative dimension to effectual decision-making, as claimed by (Klenner et al., 2022).

The sensemaking aspect of the model depicts the desirable integration of shared meaning – the emergence of desiderata – among different parties with the designer acting as an enabler and integrator. The designers or the innovation-producing organization must step back and reflect on their actions and practices to ensure the success of their innovation endeavors.

Entrepreneurs and designers immerse themselves in situations where they must create shared meaning before they know the criteria for decision making (Weick, 2004). This is akin to the phenomenon known in design research as “intuitive reasoning” (Friedman, 2003). The design profession can be significant because

it has ways to address challenges that are not just technical but also social and creative. Design can complement and bring added value to the efficiency-driven rationality of economists and engineers. Perhaps design can rise to the role it has always wanted to play, building bridges between technological research, economics, ethical and sociocultural responsibilities, and new innovations.

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About the Author:

Ilkka Kettunen is a Principal Lecturer at Savonia University of Applied Sciences. His background is in industrial design, which he has practiced as a design consultant and design manager. Kettunen defended his doctoral thesis on the sensemaking practices of design in 2014, using autoethnography as his research approach.

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