CULTURAL PROBES METHOD IN DESIGN RESEARCH: CREATIVITY IN SKETCHES

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Abstract. Despite the abundance of methods and models, the design research is still often entangled in concepts irrelevant to design practice. This paper rethinks the discourse of design research and the evolving role of a designer. The most important attempts to build a design as an academic discipline are mentioned, along with research communities that are operating in the field of design. Art-and-design-based approach in design research in Donald Schön's works on architecture and design practice, rises the importance of sketches in the creative idea generation. Implementing sketching techniques into the cultural probes, as one of an art-and-design-based research method, opens up ways to innovative design solutions. This paper discusses the relationship between the method and sketching in the context of the case study "When Nobody Sees". Sketching is discussed as an art-based tool for problem-setting.

Keywords: art-and-design-based approach, creativity in sketches, cultural probes, design research development, research through design.

Introduction

In the ongoing discussion in the design discourse, attempts are made to overview the questions on a design as an academic discipline and design research methods. This paper highlights sketching as one of an art-and-design-based approach in design research visualization technique for problem-setting. The aim is to overview sketching in the context of cultural probes as one of the design research methods, in the context of the case study "When Nobody Sees". Integrating the sketching technique into the various stages of cultural probes research method helps to clarify the problem, analyze the outcome and make the research even more visual. This method brings design one step closer to an autonomous academic discipline with its own playground of research and helps the designer to understand people and their environment through visual explorations.

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1. Design research development

Designers in industry always have been recognized as an intermediary between industry and consumers. The global organization for industrial designers, World Design Organization, defines the occupation as follows:

> "Design is a creative activity whose aim is to establish the multifaceted qualities of objects, processes, services and their systems in whole life cycles. Therefore, design is the central factor of innovative humanization of technologies and the crucial factor of cultural and economic exchange" (Mutlu & Er, 2003, p. 14).

In English-speaking regions design research came from the fields of engineering science and architecture, trying to develop design methods for evaluating buildings and products. Practicing designers viewed design methods and design science as esoteric, with low impact on practice. Discourse on design science have been dominated by concepts irrelevant to design practice, and design research was carried out under the basis of system theorists, computer scientists, operation research specialists and mechanical engineers, whose conceptual systems bypassed industrial and graphic design (Bonsiepe, 2007).

The discourse on the role of design continues – an American design historian, researcher and educator Margolin points to "design's broad role in society" and argues for the need to

> "make a place for design discourse within the larger debates about social theory, notably those that center on the transition from an industrial to a postindustrial society, and from a modern to a postmodern culture" (1989, pp. 6–7).

Design research has gone through several phases over the last 70 years. The first serious attempts to build design on scientific foundations took place in Ulm School of Design, Germany, and later in architectural programs in the United States (US) and at the Royal College of Art in London, United Kingdom (UK). Most key figures involved in these efforts hoped of turning design into a science by the early 1970s.

Interest in design research grow in the 1980s and 1990s. First – in design management in the 1980s, but a deeper interest in research emerged in the 1990s, when design became digital and communication technologies began to change the technological base of design. There is no obvious form in digital technologies, so designers have faced the challenge of *what* to create, not *how* to create, and the need to do user research.

Today, there are several research communities in the field of design – usability and user experience researchers, ethnographers, sociologists, even some natural scientists, management scholars, computer scientists and engineers of many persuasions, and "practice-based" research communities that bring art into design research. Much of this development has been based on the conceptual apparatus of semiotics, philosophy, management, usability engineering, psychology, and sociology. The picture of design research today is hard to compile because of the proliferation. As new research communities have developed, they have usually learned their research practices and worldviews from disciplines with longer historical roots (Koskinen et al., 2011).

2. Art-and-design-based approach in design research

It is common for research to be based on certain wider conceptual assumptions about what research is, what research method is appropriate and useful for new knowledge. It is there-

fore important to clarify these assumptions. The research method is the research strategy that drives the whole process – from assumptions to research planning and data collection.

The development of design research has been described using many labels, highlighting not design research methods, but "the goals of those who pursue it" (Bereiter, 2002, p. 321). In so-called "constructive design research" was done attempts to classify design into few methodological approaches – *laboratory-based*, *field-research-based*, and *art-and-design-based approaches* (Koskinen et al., 2011; Gall Krogh & Koskinen, 2020). The art-and-design-based approach calls for experimentation and methodological development and brings design research close to contemporary art, as such, because its best-known proponents were critical designers, who tend to exhibit their work in galleries and museums rather than in conference papers. Frayling (1993–1994) – one of the proponents of so called "research through design" – proposed the integration of subjective experience-, activity- and image-based designers-artistic knowledge into the process of intersubjectively verifiable knowledge production. This approach opened up perspective for independent design research and raised expectations to produce applicable knowledge, in line with growing significance of practice-oriented knowledge for society. The concept of "research through design" is based on Cross (2001) idea about a "designerly way of knowing" – methods and processes from design practice, where the knowledge gained can be implicit, residing almost entirely in within the resulting artefact (Verbeke, 2013); the knowledge produced, lies in the artefact, because it reflects a framing of the problem (Zimmerman et al., 2007). "Research through design" is an attempt to re-value practice and to link theory and practice (Herriott, 2019, p. 3).

There is an opinion, that designers trained in the arts have an aptitude to capture ephemeral imaginative moments, impossible to catch in other research. They are trained to imagine and sketching primary idea, identifying what is necessary. As noticed a design researcher and educator, Emeritus Professor of Design Studies at the Open University, UK, Cross,

> "design has its own distinct intellectual culture. The whole point of doing research is to extract reliable knowledge from either the natural or artificial world and to make that knowledge available to others in re-usable form" (2001, p. 55, 2006, pp. 100–101).

As Cross noted, there is a reflection by the practitioner on the work, and the communication of results from that reflection (2001, p. 55, 2006, pp. 100–101).

In the art-based design research, the imagination is the intellectual medium that synthesizes antitheses, turns difference into likeness, unifies oppositions and does so in pleasing and striking ways (Murphy, 2017). Italian architect and designer Branzi (1988) wrote, that the task of design research is to keep distance from the "pure practice of building". For him, design should offer alternatives rather than try to alter reality directly:

> "The architectural or design project today is no longer an act intended to alter reality, pushing it in the direction of order and logic. Instead, the project is an act of invention that creates something to be added on to existing reality, increasing its depth and multiplying the number of choices available" (Branzi, 1988, p. 17).

A discourse based on hypothetical designs, enriches imagination and opens new ways of seeing and discussing opportunities (Molotch, 2003). This discourse may sound like art, but it may also provide important preparation for the future, much as a play prepares children for their later years.

In art and design, there is more tolerance to idiosyncrasies and vague analysis; in fact, ambiguity may even be encouraged, if it leads to interesting designs. When Italian a housewares and kitchen utensil company *Alessi* renewed its thinking about kitchens and went from stainless steel and other metals to plastics, its designers started to redesign spoons, eggcups, and bottle openers as if they were toys (Verganti, 2009), also see *Museo Alessi* site in Internet (Alessi SPA (EU), 2022) – the avantgarde design of a Seymour (2011) owe a lot to performance art, actionism, and installations.

The primary objective of art-and-design-based approach in design research is to explain how visual objects and arrangements are produced via forms and metaphors. The designer's working process is defined as based on more aesthetic rationality in which creating and materializing meaning are central to the creative process. Design achieves its most pronounced effects by mobilizing the imagination. The Italian designer Alberto Alessi assumed that, "A true design work must move people, convey emotions, bring back memories, surprise, and go against common thinking" (Alessi SPA (EU), 2022).

3. Sketching in design research

The research work on sketching has been carried out in the areas of architectural and engineering design and found that making and perceiving sketches plays an important role in creative process. Ambiguity in sketches facilitates reinterpretation, and can trigger new ideas (Tovey et al., 2003). Research findings revealed, that the design students and professional designers the form ideas that emerged on the paper while sketching.

The underlying philosophical assumptions on sketching in design is Dewey's[1] (1925) idea about aesthetic practices, which he defined as experiences and meanings translation from one situation to another via some form or medium. The medium may be the painting or designer's artefact. The thing that may later become a new idea grows out of a vague situation. In order to engage in such situations and to catch what is important, it is necessary to engage in active interpretation to try to understand the situation, together with a creative process where new understandings are materialized.

People in the field of design are familiar with Dewey's ideas on experience and aesthetics, which also appear in Schön's – professional knowledge and organizational learning theorist – notion of reflective practice, which he uses to discuss the ways in which professionals combine practice and reflection. Sketching as key form of creative practice is focus of attention in Schön's work *The Reflective Practitioner: How Professionals Think in Action* (1984, originally published in 1983). The main idea concluded that seeking to understand is typically what professionals do when they face uncertainty – they reflect. Schön used a series of examples of situations, from the Vietnam War to Watergate scandal, to discuss how attempts of professionals to solve problems in mechanistic ways instead created new and even worse situations. The situations of practice are not problems to be solved – problematic situations characterized by uncertainty, disorder and indeterminacy (Schön, 1984, p. 15). Practitioners deal with such situations through reflection in-action, entering "indeterminate zones of practice, where

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[1] A key theme in the US philosophical pragmatism (Dewey is one of the key figures) is its focus on people's practices and experiences, not on abstract theories.

competence takes on new meaning", and where reflection-in-action may or may not result in the establishing of a more well formulated problem – in problem-setting (Schön, 1984, p. 25).

For Schön, sketching is a necessary tool for designers and architects in getting to deal with wicked problems. In sketching designer may switch from detail to whole and back again, also between reflecting on the situation and attempting to relate to it through various suggested solutions. In this process the problem in itself is framed in tandem with trying out possible solutions – it is more about problem understanding, or "problem-setting", than about "problem-solving". The problem is understood only at the end of the process, by which time one tends to also have the solutions clear in one's head, as well as a deeper understanding of the situation as such (Schön, 1984).

4. Cultural probes as design research method

By now, design research has gained a maturity and autonomy, methods like *scenarios* (Nielsen, 2004), *personas* (Pruitt & Grudin, 2003), the *cultural probes* played an important role in facilitating designers' entry into research. These methods are used to communicate user's needs, emotions, and values from the individual perspective and have proved that many things in design practice can be turned into research methods.

The cultural probes process emerged as a design led, arts inspired, approach to developing new understanding of cultural communities (A. Júdice & M. Júdice, 2007). Bill Gaver (former cognitive scientist), the ideologist of the cultural probes, suggested idea to replace the scientific methodology with an artistic one. His idea was based on the "psychogeography" of Situationism, the essence of which was situations created by artists that encouraged people to pay attention to the restrictions of their daily routine.

The designer drew from the theory and techniques of the Situationism (Debord, 2011) and to some extent Surrealism (Levy, 1995) in order to articulate a new approach. The Surrealist pursuit of the marvelous in the face of apathy spoke to the designers

> "desire to forge an approach that was playful in intent, delivery, and eventually designs. Surrealist techniques for elevating the unconscious and provoking new dialogue, such as dream writing and games of chance, provided resources of inspiration. Likewise, the situationists […]" (Boehner et al., 2014, p. 186)...

…ethos of grounding Surrealist ideas more in the everyday and particularly in the fabric of place provided a resonant philosophy for understanding the very different cultures and communities.

Cultural probes are a method for developing "richly textures but fragmented understanding of a setting or situation. […] their purpose is […] to inspire what might be" (Boehner et al., 2014, p. 185); help to understand people as unique, revealing of participant's personal lives and informing design. Cultural probes

> "offer fragmentary glimpses into the rich texture of people's home lives. They allow us to build semi-factual narratives, from which design proposals emerge like props for a film" (Gaver et al., 1999, p. 22).

Probes embody a different sensibilities; tolerate uncertainty and risk, accept and value the idiosyncratic interpretations. Probes open up design possibilities and can stay part of a

conversation among designers and the people and places for which they design (Boehner et al., 2014, p. 185). One of the most common mistakes researchers make is approaching the cultural probes method with a purely scientific mindset, seeking definitions and unequivocal facts. These are the values that the method challenges the most – cultural probing encourages making mistakes, seeking for unexpected results or even failing. The method has been developed as a declaration of independence from the requirements for social science research. The subjectivity here is the key to inspiration.

It is most common to implement cultural probing in the early stages of design while searching for design ideas and opportunities. The method helps to reveal what design products could be relevant for the target audience and raises the importance of the concept development in design practices (Kärnä-Behm, 2016, pp. 183–184). It is not appropriate to apply cultural probing to a large target group, as the purpose of cultural probing is not a statistical generalization of information, but the inspiration (Celikoglu et al., 2017, pp. 84–88). The depth of the outcome is valued over the quantity of the answers. Even if there would be only one participant in the research, there is still a chance one's answers would open up potential ideas for design concepts. The more participants in a study, the more time the study requires, so the adequate number of individuals in the target group is 5 to 10 people.

The tangible intermediary in the conversation between the designer and people is the cultural probes kit, a collection of open-ended tasks given to volunteers to document their daily experiences for a certain time. Usually, cultural probes kit includes such materials as maps, postcards, diagrams, and analogue cameras (Boucher et al., 2019). All these items of the designer's choice pose a question playfully and provocatively. The users of the kit are given a choice of how they want to record their thoughts and feelings – through text, photos, or drawings. Individuals are responding to questions independently in their domestic environments without a presence of a researcher. Once the tasks are completed, they are returned to the designer, who analyses and creates new meanings out of the collected data.

The aspiration of this method is that the research findings would preserve a sense of mystery and leave enough room for the designer's interests and imaginations (Boehner et al., 2014). In response to this challenge, the method brings its special way to collect the data. To get the most unexpected answers, the designer seeks to create as ambiguous tasks as possible. The participants are given only the most essential rules and descriptions of the tasks, so there is ample room for their own interpretation of how they should express themselves. Additionally, the visual design of the cultural probes kit is usually simple and playful. This way people are encouraged to think less of the rules and have fun sketching out their thoughts. The carefree manner of asking and answering makes the research data sketchy and therefore an inspiring material for a designer to work with later on.

As mentioned before, a new approach to daily experiences is articulated by integrating Surrealism, Situationism, Dada, and fictional literature elements into conceptual and aesthetic levels of cultural probes kit (Gaver et al., 2004). Adapting conceptual art techniques provokes participants to see their everyday life with a new perspective and opens up some hidden aspects of participants' personalities. Usually, it is difficult to overcome the research caused formality between the researcher and study participants. However, if you ask the participant to explain his social relationships in a visual map based on Dante Alighieri's *Divine*

Comedy (in Italian: *Divina Commedia*, 2003), you can easily create a playful mood for the research – looking into serious problems through the lens of the game helps people to share their deepest feelings easier.

5. Case study "When Nobody Sees"

The qualitative study "When Nobody Sees" based on the cultural probes method took place from February 2nd to October 30th in 2020 in Vilnius, Lithuania (Liebutė, 2021). Lina Liebutė, the Master Student of Vilnius Academy of Arts, Lithuania, has chosen to implement the techniques of cultural probes method to find an effective solution for visual communication design product about panic attacks and anxiety (the tutors of research – Prof Audrius Klimas, Prof Dr Jūratė Černevičiūtė). The research aimed to find a way to communicate about panic attacks without bringing the target audience back to the unpleasant memories. The cultural probes method has allowed exploring the daily experiences that lead to this state of mind, instead of focusing on panic attacks as a consequence of a stressful lifestyle. It would be impossible to cover all the social groups facing panic attacks in a study based on a cultural probing approach. For this reason, a narrow group of people with a high propensity for emotional burnout was chosen to be the focus group. It consisted of five young (21–27 year old) Vilnius citizens pursuing a career and living in an intense rhythm of life. Individuals have been documenting their daily experiences independently for three months. The slow process of the research ensured that the participants can set their pace of doing tasks and reflect on more demanding questions.

In the case of "When Nobody Sees" study, the tasks for the cultural probes kit were created only after four qualitative interviews with professional psychologists were carried out (1st interview was held on 2 of February, 2020, 2nd interview – on 20th of February, 2020, 3rd interview – on 25th of February, 2020, and the 4th interview – on 5th of March, 2020) (Liebutė, 2021). Based on the theory of the probes method, this step is not necessary. However, it provides fact-based information and a better understanding of this certain problem. The following step was to create a visual questionnaire for the focus group, already known as a "cultural probes kit". Most of the tasks were based on the motifs of fiction literature, such as fairy tales, *Divine Comedy* by Alighieri (2003), *The Tragedy of Hamlet, Prince of Denmark* by William Shakespeare (2012, originally published in 1603), *The Metamorphosis* by Franz Kafka (2010, originally published in 1915), *etc.* Some features of Surrealism and Dada movements such as collage technique and surreal proportions were integrated as well. Collages were especially important to the visual identity of the study. They were designed to make fun of consumerism that contributes to the stressful lifestyle that leads to anxiety. The cultural probes kit is a sketch of how the designer comprehends the problem. Every piece included in the cultural probes kit symbolizes the designer's thoughts of how to reach the person encountering a certain problem. The probes kit of the "When Nobody Sees" study included (see Figure 1) such tasks as:

1. Five postcards, inviting the focus group to write five letters to their future selves;
2. The disposable camera with a list as a guideline of what kind of situations or things they should take pictures of;

Figure 1. The cultural probes kit for the qualitative study "When Nobody Sees"
(source: Liebutė, 2021)

3. Two different templates of the mind maps for calm and anxious moods;
4. The simulation credit card, inviting the focus group to make a list of things to buy if there is no money limit;
5. The template of the social relationship chart based on Alighieri's poem *Divine Comedy* (2003), and its spheres of hell and paradise;
6. The empty disc of music, inviting the participants to make their own music playlists and share how their life sounds like.

After three months, the participants were revisited, the completed cultural probes kits were collected and informal discussions about the research experience were implemented. The designer's turn to engage with the probes came again. The goal was the inspiration, so it was chosen to analyze the data by doing visual mind maps based on the answers of the participants. The assumption was that by adding the designer's own interpretations and associations, the previously unexplored design possibilities will be uncovered. As the participants revealed rich but fragmented information about themselves, there was no space for the generalization of the data. Five different visual mind maps were created to analyze the inner world of five different personalities. Later on, visual sketches of the given data of each participant were turned into more textual and summarized mind maps that clarified the main ideas that sparked during the sketching process (see Figure 2). This kind of mind mapping led to five different concepts for a visual communication design project about panic attacks. One of them was developed furthermore and became an inspiration for a new board game meant for people experiencing high levels of anxiety in their everyday lives. As the study revealed
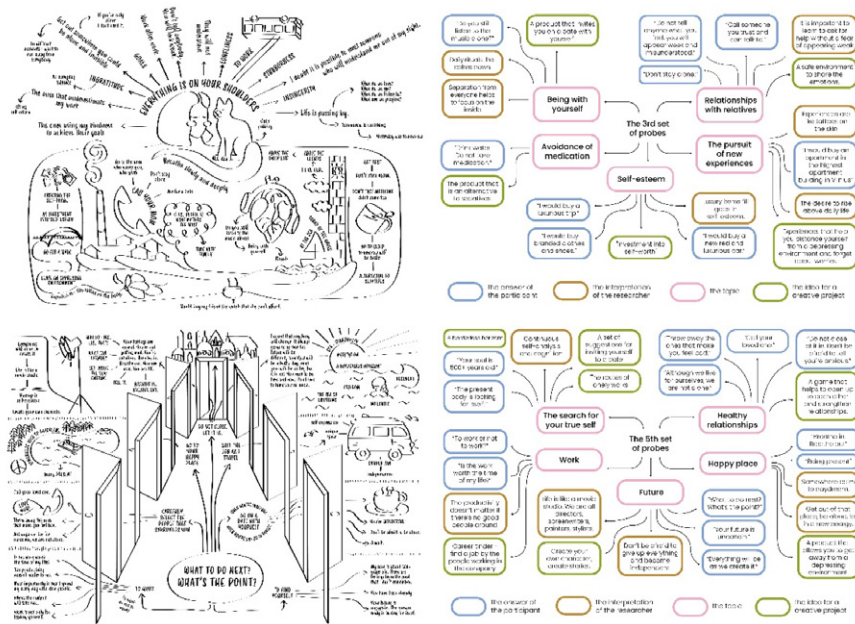
Figure 2. The visual sketches created while analysing the outcome of the cultural probes study "When Nobody Sees" (source: Liebutė, 2021)

that gamification has a positive effect on the target group's willingness to share emotions, the board game creates a perfect environment to start conversations about anxiety.

The intention while creating the board game was that the visual identity itself would encourage people to share their thoughts and feelings. For this reason, the idea of the board game was based on the concept of *kintsugi*. *Kintsugi* is the Japanese art of repairing broken pottery with gold (Niimi Longhurst, 2018). This idea is often applied in philosophy – it celebrates imperfection and teaches to see the beauty of every failure in life. The main idea of the game is based on *kintsugi* – no matter how stress and anxiety break us, talking to a dear person can glue the cracks in our souls with gold. Game cards are the core of the game – each of eighty cards brings a question on one side and a unique illustration on the other (see Figure 3). The ideas for the illustrations were born by using the technique of automatic sketching, when a designer is sketching the flow of thoughts allowing the subconscious mind to bring up the ideas. In this case, sketching helped the designer to clarify different kind of sources of anxiety and find the design solution for the cards. The illustrations are quite abstract and surreal, leaving the room for the imagination of the players. Golden *kintsugi* cracks are complementing illustrations and giving them a new subtext of emotional healing.

All in all, the study "When Nobody Sees" revealed that the sketching techniques and cultural probes method can go hand in hand towards the natural common goal of both processes – the inspiration for the new design possibilities. Full of fragmented data and subjectivity, neither of these processes can provide accurate scientific information. Therefore, inspiration is valued over information. The cultural probes method combined with sketching becomes an alternative research tool for the minds who tend to think visually because it

Figure 3. The illustrations made for a board game cards, using the automatic sketching technique
(source: Liebutė, 2021)

gives a chance to work with the visual data during the entire research process. Integrating the sketching technique into the various stages of cultural probes research, helps the researcher to clarify the problem, analyse the outcome and make the research even more visual.

Conclusions

Modern design has evolved from a focus on products and services to a range of methods that is applicable to a different of societal issues. Coordinated with the knowledge and expertise of specialized disciplines, design research provide ways to develop practical approaches to complex issues. Design research is very important in the emerging academic discipline of design. In most understandings of design research is highlighted the idea that, in increasingly complex environment for practicing and studying design, there are lack of system for the development of design as an academic discipline. Practice knowledge abounds in the design research discourse, but this knowledge is predominantly tacit knowledge, or is developed under the guidance of conceptions that do not reflect design practice.

One of the tasks of an art-and-design-based approach in design research is to bring design research closer to contemporary art – the imagination is the medium for synthesizes, unifies oppositions in the design artefacts. The primary objective of art-and-design-based approach in design research is to explain how visual artefacts and are produced. Seeing some analytic processes in design research through art gives insights into how much designers and design researchers work. It also helps to understand the creative steps they take. Such explanations are difficult because the act of creation is unclear. So is the cultural probes method.

The cultural probes method was developed to celebrate the uncertainty and ambiguity, to declare the symbolic independence from the requirements of traditional research methods of social science. Instead of reaching for statistical generalized information, this research method raises its independent goal – the inspiration for design possibilities. The method offers creative industries a tool for researching their target audiences in the early stages of creation. Therefore, it raises the importance of the concept development and creativity in the design practices.

This method brings design one step closer to an autonomous academic discipline with its own playground of research. The method helps the designer to understand people and their environment through visual explorations full of the elements of gamification. It makes it easier for designers to envision and realize alternative situations and design solutions. Cultural probing combined with sketching becomes an alternative research and creativity tool for the minds who tend to think visually because it gives a chance to work with the visual data during the entire research process. The method helps the designer to clarify the ideas, and build a strong foundation for the empathetic design.

The cultural probes method-based study "When Nobody Sees" implemented in 2020 in Vilnius, revealed that the design field natively has all the techniques necessary to reach the most important goal of design-led research – the inspiration for design possibilities. The study exposed the method's ability to bring design industry closer to people. The possibility to collect data remotely is especially helpful when the creators are trying to reach sensitive groups of people, or when the presence of the researcher would negatively affect people's will to share their experiences. Once the cultural probes kits are collected, the data provided by people can directly influence further creative decisions of the designer. At this point, the method enhances co-creation experience, because the final design solution might have been totally different if it would not be directly inspired by people. The empathy developed between designers and users during research allows designers to create data based semifactual narratives that open up new design concepts. As study "When Nobody Sees" revealed, co-creation helps to approach the problems from fresh angles and come away with better products based on potential users' thoughts and desires. It is very likely that co-creation led methods such as cultural probes will become more and more meaningful in the future of creative industries. Especially in the industry of design.

Designers will need to adapt themselves to unfamiliar situations and learn how to collaborate with non-designers, recognize patterns among different types of problems, draw on their knowledge and the knowledge of others, search for facts from diverse sources in order to prove or disprove their ideas, and make informed decisions in a systematic and insightful way. In this context, design research can be seen as a process of intelligence gathering, information analysis, and reasoning that can lead to better and more effective design outcomes.

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