KARELIA UNIVERSITY OF APPLIED SCIENCES
Degree Programme in Design

Vladimir Markov (1001846)

PERSONAL DESIGN PHILOSOPHY AND DESIGN PROCESS

an exploration through the study of usability in camera design

Thesis
November 2013

Karelia
UNIVERSITY OF APPLIED SCIENCES

THESIS
November 2013
Degree Programme in Design

Sirkkalantie 12A
FI-80200 JOENSUU
FINLAND

Author(s)
Vladimir Markov

Title
Personal design philosophy and design process

Abstract

The thesis presents an overview of a personal exploration of design and a critical view of existing theories and methods. The text goes from discussing the importance of having a design philosophy and proper methods of work, through how they influence each other, to the practical implications of both.

To avoid confusion and to clarify specific current issues in the industry, design is divided into two parts - a philosophy, consisting of values and principles, and a process, consisting of practical tools and methods. The former is covered through a loosely organized collection of thoughts, due to the broadness of the issue, while the latter follows a more structured development. The support for both consists of several camera designs, which are to be used as a practical research, together with appropriate literature.

The main objectives are to take a snapshot of an always evolving process, to reflect on what makes a designer a designer and to define an adaptable design process, able to address various kinds of products and/or services.

Conclusions are based on both subjective reasoning and empirical results, and are not final, but merely the result of a completion of a single stage of a constantly ongoing process.

Language	Pages 58
English	Appendices 3
	Pages of Appendices 3

Keywords
Design philosophy, design process

CONTENTS

1 INTRODUCTION 4
2 FRAMEWORK 6
2.1 Misunderstanding design 6
2.2 A personal approach to design 7
2.3 An exploration 8
3 THE CURRENT SITUATION 10
3.1 The camera industry, old paradigms in a new world 10
3.2 The current market 11
3.3 Current models and theories, and their shortcomings 13
3.4 Designer-centered design and designer-controlled process 19
4 DESIGN : UNDERLYING CONCEPTS 23
4.1 Awareness and observation 23
4.2 Designer’s objectivity 24
4.3 Approaching innovation 25
4.4 Simplicity 27
4.5 Core result, design philosophy 27
5 DESIGN : PRACTICAL PROCESS 31
5.1 Camera designs, the project structure 31
5.2 Camera designs, how the actual process went 36
5.3 Tools, digital versus analog, 3D versus sketching 46
5.4 Core result, the adaptable process 50
5.5 Core result, new ideas and questions 54
6 CONCLUSION 55
REFERENCES 57

1 INTRODUCTION

Design is a very broad concept and can be seen from many different perspectives. By trying to define it, to create theories and models to govern it, something always gets lost along the way. This is especially true and particularly problematic when such definitions start from an already limited view. An example is design being only related to the visual aspect of a product. Another is when design is squeezed to fit in a company's workflow, itself defined by entrepreneurial thinking, which is in constant conflict with any creative approach. In that sense, design is profoundly misunderstood today, by users, by the industry and, probably worst of all, by academia. As a direct consequence, designers tend to have a rather marginal importance in many companies, which results in sub-par products and that, in turn, leads to a reinforcement of the status quo. This is, of course, a very generalized view and there are many examples, where a better understanding of design issues is promoted. Unfortunately, these are mostly the exceptions, and a designer should be quite critical when faced with existing definitions, theories and models.

The reason for this misunderstanding is the lack of discourse about design as a concept, a core understanding of it and its role in society and culture. For a designer, it is of essence to know their place in the world, the market and the company. It is furthermore necessary to have a fundamental understanding, principles and values or, to put it another way, to have a personal design philosophy[1] . Such a concept is entirely non-existent in the industry's understanding of design, so, to develop it, a personal inquiry is required, as described in this thesis, looking into what design represents, what it stands for and how the individual is influenced by it or can influence it.

---

[1] for the length of this thesis, to keep things simplified, "philosophy" is defined as the personal understanding of the world and being a part of it; and "design philosophy" is the specific principles, values and understanding that make a designer a designer

On a more practical level, it is also necessary to have the proper methods and tools that will bring this design philosophy into reality. They make up the design process. There is a multitude of those in the industry, but given the lack of a proper holistic understanding, as mentioned, they are often flawed, as they are based on limited concepts and/or those external to design.

Therefore, to address the issues described on a more personal level, this thesis presents an exploration of design from a very subjective perspective. The aim is to develop a design philosophy, or, more precisely, to describe a part of its constant development and hopefully bring a structured set of values and principles, which in turn will lead to methods and tools for an increasingly efficient and personalized design process.

To support the exploration described and keep it practical, a research was developed revolving around several camera designs, concerned primarily with usability and, more precisely, the physical interface.

2 FRAMEWORK

2.1 Misunderstanding design

There are countless definitions of what design actually is, with a common one being that design is about solving problems. While this is certainly true, it is quite a limited view. As Jack Schulze, of Schulze and Webb, said, “Obviously designers do solve problems, but then so do dentists. Design is about cultural invention” (Medich 2009). This seems to be a significantly better one, in that it presents a more complete view. However, rather than trying to define what design is, which would be an extremely daunting and tricky task, it would be better to simply say that design is much more than merely solving problems, as is often understood in the industry. Or, as John Wood puts it, “most designers are paid to deliver specialist solutions to narrow, profit-seeking problems, rather than as holistic thinkers who work for society as a whole” (John Wood 2012).

Design also cannot be clearly separated from other fields, such as engineering, for example. Where does design end and engineering starts and vice versa? The two processes flow in and out of each other, making it impossible to distinguish clearly where the designer’s responsibilities begin or end. The reason for this is that design is rather englobing multiple facets of the industry - analysis, conceptualization, research, product creation and development, right down to marketing. Thus, it cannot be defined by the actual process. In reality, the process should be defined by it.

Consequently, design is a very broad concept and requires self-questioning and knowledge of many other fields and how they relate to each other. A designer must necessarily have a deep understanding of the surrounding world and its workings, as well as of his/her own place in it and to have an elevated level of objectivity. This will allow for the ability to approach a task by as many angles as possible and

to develop ethics; it is also the only way to be able to properly evaluate the design process used or to create solutions to problems of which people are unaware.

Thus, design should be looked upon through a holistic approach, which is entirely in contradiction with how the profession is nowadays defined (John Wood 2012). Users, companies and academia tend to each have their own view on what design is and how it should be implemented in real life. This results in the beginning designer being given a toolbox, consisting of contradicting and often flawed tools. Worst of all, often design is even being defined by these same tools.

Basically speaking, there are two major problems in the industry today. The first one is the limited definition of design. This hinders the personal development of designers and affects their status in the industry. The second one, stemming from the first, is the available tools, which are flawed, limited or even useless in certain cases and which also limit the positive impact of design on our society. Of course, changing the industry is not in the scope of this thesis, but, at least, misconceptions should not come from designers.

2.2 A personal approach to design

In this thesis, there will be a clear distinction between design as a concept and design as a professional field. The first is considered essential to any design activity, while the latter is entirely flawed in its current form, as it is based on an understanding developed outside of the field of design. Design, as a concept, should be examined and understood as a whole, which will allow for the development of many aspects underlying any design process, such as intent, appropriateness of methods, empathy, etc. (Baty 2012). All of these go beyond the process itself and are actually necessary for its construction. They can be defined as a personal design philosophy and are what makes a designer a designer. As

Jonathan Ive puts it, “A big definition of who you are as a designer, it’s the way you look at the world” (Hustwit 2009).

Once a reliable and appropriate design philosophy is developed, it can be applied on a very practical level, i.e. the actual product development. Thus, the design process flows from the philosophy and cannot be defined properly without it. It consists of very concrete and practical tools, both tangible and intangible. The former are simply the physical ones used, such as a computer, modeling clay, drawing paper, etc., while the latter consist of the particular methods used in the work process, such as how to organize data, how to communicate with a client, how to make a presentation, etc.

2.3 An exploration

The approach discussed in these pages is merely an exploration of what can be achieved through a more personal and holistic exploration of design, as opposed to relying on existing theories and models. Some of the concepts discussed are simply too broad to fit entirely in this thesis and are also difficult to approach, which means that only certain aspects are presented in more detail. A big part is based on logical reasoning, self-questioning, analysis and experimentation, especially when it comes to the philosophy part. It is concerned more with personal development tools, rather than with trying to apply definitions to an always evolving concept.

On the other hand, the design process research, the second level of the exploration, is based on experiential learning, with the objective to develop a concrete personalized process, which can be applied in practice to any type of product. In short, an adaptable custom-designed toolbox.

The development of both philosophy and process is supported by a set of camera concepts, having to see primarily with the physical camera interface and its usability. During the development of each design, a multitude of tools and methods are used and compared, and at each completion, the process is reevaluated and, hopefully, improved, with the help of the design philosophy.

There are three reasons why camera designs were chosen as the basis for this work. The first is a personal interest in photography gear which would keep my motivation high throughout a sometimes tedious process. The second part involves the complexity of such a project and would help reveal more weaknesses in my design approach. The last reason is a perceived lack of innovation in the camera industry, having to do mostly with usability.

3 THE CURRENT SITUATION

3.1 The camera industry, old paradigms in a new world

To better understand the challenges encountered during the camera designs and why they were chosen as the basis for the practical research, it is important to take a quick look at the camera industry. After the switch from film to digital during the ‘90s, several changes to the camera interface took place, most notably[2] the inclusion of software menus and directional buttons to navigate them. However, while a new technology was implemented into the camera, it was not much different than simply attaching a computer to it, i.e. one more feature was added, and the overall interface became an uncomfortable compromise between old and new.

Fundamentally, the camera industry has failed, with some arguable exceptions, to embrace the new technologies available, when speaking about interface design. Today, we have either a modern technology controlled by an interface from the film era, or an interface reminiscent of a computer, rather than a photography-oriented tool. Very few companies have actually tried to radically redefine existing paradigms. One of them would be Sony with the introduction of the DSC-R1, in 2006, and the NEX-7, in 2011, where a deeper exploration of the interface was done. Yet even these designs stayed somewhat conservative.

It is also interesting to look at the industry from the users’ perspectives. With the switch to digital, the single most important issue for any photographer was image quality, as imaging sensors were lagging behind the quality of film. Dynamic range, color depth, resolution, etc., were all not up to the standards of discerning users.[3] Consequently, the primary developments were concerned almost exclusively with

---

[2] in terms of usability

[3] this is also one reason why film cameras were used in parallel with digital ones for many years

sensor improvement. Around 2006-2007, after several generations of sensors, the supremacy of film was very seriously put into question. At this point, most users probably began realizing that, while they had the quality needed for their images with digital, the experience was below their expectations. Their attention shifted from image quality to user experience. Camera makers seem to have decided to address this through two different approaches - providing more and more features or bringing back the camera controls from the film era. Both are flawed approaches and very reminiscent of the mobile phone industry, before the iPhone.

One can only speculate as to why camera makers are unable to move radically forward, but it is probably due to several reasons. Most camera companies are Japanese and the way business and design are approached in Japan is highly specific. There also might be an interest of keeping the status quo for whatever financial reason. It could also be inertia from the beginning of the digital era, where only incremental upgrades were possible, given the relatively slow progress of the available technologies. Given that none of these can be directly influenced by designers though, they are not of interest here. This leaves three possibilities of importance as to why this is happening. One, designers are failing at their job. Two, a lack of understanding of the market's demands, due to the lack of designers, or at least the lack of freedom given to them, i.e. an overreaching marketing department focused intensely on short-term strategy. Lastly, three, consumer acceptance, photographers themselves being very conservative and slow to adopt new technologies.

3.2 The current market

It is easy to see, by speaking to professional photographers or visiting dedicated online forums that there are plenty of issues with designs from any camera company today. Having issues is obviously something very normal for any sophisticated product. The problem is that, in the camera industry, an impressive

number of them are easily correctable, often software-related ones. Yet they never are. This cannot be justified as a way of differentiating products in the product line either - even flagship models lack basic features. In the end, it certainly does seem that it is not consumer acceptance that is slowing down development.

Probably one of the major examples of how the design progress is stifled today is feature overload[4], which is also rather revealing of the place of design in today's industry. It is a common occurrence that companies put more and more features into a product and advertise them heavily, not for their usefulness to the final user, but to out-feature the competition. "Instead of optimizing for a minimum feature set (that had been defined by customers) a competitive analysis drives a maximum feature set" (Blank, 2010). This can be seen very clearly in the mobile phone industry and more specifically, the case of the iPhone. Since its inception in 2007, not a single company has managed to improve on it. Instead, bigger screens are made, faster processors are included, cameras with more megapixels introduced. These features are, in reality, either significant trade-offs or entirely irrelevant to the user experience. Looking at the mobile phone market as a whole, it seems rather worrying that there is only one company being able to radically move forward. The obvious question here is why is this happening? Putting aside some of the market issues described in the previous section and on which the designer does not have much, if any, influence, and now also consumer acceptance, there are only two potential reasons left for this to be happening. The first one is that the big majority of designers are entirely out of contact with the user base and simply have not been educated properly to begin with, and thus unable to properly do their work. The second one, significantly more probable and plausible, is that management and marketing have too much say on design. This is how an overreaching marketing department can put promotional needs before the end user's experience, i.e. feature overload. When, as expected, the product does not meet expectations, the design department is at fault. Hence, analysts are called to make

[4] also called feature creep

up a few theories and models to solve the problem. However, they are solving the wrong problem.

For a reference, it is worth looking at the computer and mobile industries and most specifically Apple. While plenty of phones and computer tablets used the same technologies as the ones deployed in the iPhone and iPad, nothing was as successful. Even though touch screen devices have been available for quite some time, the software part was not optimized for its use. Apple overhauled the whole experience to the point of creating an entirely new device. A new operating system, the iOS, was created from the ground up, specifically to address touchscreen technology. Rather than trying to somehow fit in an existing design, they changed the paradigm. Unfortunately, in the camera industry this kind of forward thinking seems to be absent, with only a few very limited exceptions.

Looking in the past for yet another example, the functionalist movement used the newly available technologies in their full to create something new, unlike most of the revival designs, which merely copied what was previously available, in mass scale and for cheaper. This is a very important point when it comes to innovation and proper design. There is a difference between merely using a new technology and fully embracing it. In the perspective discussed here, the former means to only include a new part in an already existing process, while the latter means redefining the whole process. This is something the iPhone did in the mobile industry and the iPad did by creating an entirely new market.

3.3 Current models and theories, and their shortcomings

Following some of the above reasoning, many of the modern models and theories present different issues, which make them unsuitable for a range of tasks. Most notably, there are five major problems, four of them related to the industry itself and one having to see with the users.

The first issue is about relevance or pertinence. Models and theories are meant to address the shortcomings of the design process, except said shortcomings often do not stem from the designer side, but rather from the companies' structure and entrepreneurial thinking, which is also slowly seeping into the customer's perception of products and just completing a vicious circle. This is what the feature overload example shows. Theories and models are only addressing the pre-existing conflict between entrepreneurial and design thinking, by creating a gap between the two or by avoiding it, intentionally or not.

This can also be clearly seen in how innovation is approached. Without trying to precisely define it, any innovation process requires sifting through ideas to get to an optimal solution for a given problem. Unfortunately, this will also lead to unusable ideas, which, in turn, is often considered by companies to be a waste of time, while actually being merely a part of the process. As Jonathan Ive puts it, "There's no learning without trying lots of ideas and failing lots of times" (Richmond 2012b). As a consequence, designers are given less freedom. When it comes to innovation, Horace Dediu says:

> If a company produces a string of successes, the conventional wisdom is that the chances of another success are precisely zero. A company is valued based on its cash flows and foreseeable improvements to them. What it's not valued on is its innovation flows (and foreseeable improvements to them). (Dediu 2013.)

Another example of this relevance issue would be design becoming more and more scientifically oriented, using research tools borrowed from other fields. The result is an appearance of a partial fusion between design and entrepreneurial thinking, but it is actually nothing more than slowly destroying the creative core of the process (i.e. making marketing out of design). The conflict between the two will always exist and there should be more attention as to how to actually deal with it, rather than avoid it. Currently, only the symptoms are addressed, while the actual

issue stays unresolved. This is simply the result of that same misunderstanding of design and its importance.

There is a saying that anything good requires time and commitment. This is not the order of the day anymore; now is the time of mass-produced products with planned obsolescence, with the idea of simply selling more of what the marketing department thinks is appropriate. Quality products in some areas are literally non-existent. While all of this may sound somewhat theoretical in its relevance to the field of design, it has very real consequences, such as consumers being taught to enjoy specifications, instead of user experience, and designers studying flawed theories and models, which only reinforce their already marginalized[5] position. Many companies do not even have designers and it is the engineers, for example, who serve that role.

This first relevance problem stems directly from the lack of intellectual discourse about the concept of design, which would shed light on its importance in society as a whole. Until such an endeavor is carried out, on a bigger scale than a few articles, the way the practical design process is defined will be flawed, because it is based on external concepts. And this is where another problem appears.

The second issue is the definition pitfall. It is a very human trait to miss the forest for the trees, especially with all the rationalization going on. Theories and models get increasingly more sophisticated, becoming more of an intellectual exercise, rather than providing actual relevant improvement. With the desire to define every little thing and discuss issues for the sake of the discussion, the big picture quickly gets lost. For example, human-centered or user-centered designs are simply different optics, which one can (and must) choose based on their relevance to the design task at hand. They should be treated as the limited tools they are and not be looked upon as universal truths about design, which is what is often happening in reality. Activity-centered design, for example, goes even further by saying that

---

[5] marginalized in comparison to what the place of designers should be, according to this thesis

tools can define an activity (Norman, 2005). However, design should not and cannot be defined by its tools, in the same way that a person does not become an artist by simply knowing how to use a brush proficiently. Even though the latter might be a necessary condition, it is always secondary. The proverb, "if all you have is a hammer, everything looks like a nail" is very well suited to describe the phenomenon. It can be seen both in the workplace and in academia, and consequently in the user's perspective. The consequences of this understanding, or actually misunderstanding, in the real world are very tangible. For example, how can one develop ethics through tools? Design ethics can only stem from a design philosophy.

It is important to remember that methods and models are there to help us focus our thoughts and be more efficient, but the thoughts are the actual design and one can make great products without any knowledge whatsoever of said methods and models. Design happens in the mind; this is easily proven by simply looking at our history or specific fields of design. Before the advent of design schools, graphic designers, for example, were self-taught and yet, they were thriving, because they had the drive to explore (Bierut 2007, 14).

That is why, in the exploration described here, philosophy and process are clearly separated and, when it comes to the latter, the focus is more on very specific and concrete methods which can be implemented immediately. They should be to the point, concise and straightforward, with clear advantages for the design process. Building models on top of other models and creating generalized theories should be left to academics and any results obtained by them should be measured against existing performance only, when it comes to the design process. Furthermore, until design philosophy is taken seriously, there will always be a void, which will easily be filled with entrepreneurial thinking.

Even the generally limited practical usefulness of these models and theories inside the current paradigm, in and for which they were created, can be disputed. This is

the third problem and it has to see with scale and focus. The bigger the scale of the project and the entity developing it, the more useful such tools are. However, for smaller companies and freelance designers, the benefits are simply not the same. There are no departments to be coordinated, there is not a huge multitude of projects to be tackled by large teams, resources are limited, etc. Then, the usefulness in specific cases, i.e. the focus, can also be disputed. Making a lamp, for example, can very well be done without any user input in many cases, nor would creating a one-off product certainly benefit from most existing theories.

The fourth (and last, related to the industry) issue is personalization. Most available tools are ready-made and one-size-fits-all. They are all external to the designer. This is, of course, an expected result, simply because of the practical impossibility to address everyone's needs on an individual basis. It is an inherent problem. Thus, the creation of an internal, more convenient and efficient, customized set of tools falls entirely to the designer.

The last and fifth problem has to see with the end users and their involvement in the design process. Many theories and models present a heavy reliance on user input, the worst example being user-centered design. More evolved ones, such as co-design, do not seem to really escape that either. The problem is that users simply cannot be involved so deeply in the process, as the input they can provide will always be limited, by definition or, more precisely, by its nature. "To design an easy-to-use interface, pay attention to what users do, not what they say. Self-reported claims are unreliable, as are user speculations about future behavior" (Nielsen 2001). The general audience will always be limited by their knowledge of the industry and their lack of design education or interest in the field. As an example, feature overload can also be the result of direct user input. As James Surowiecki explains:

> Although consumers find overloaded gadgets unmanageable, they also find them attractive. It turns out that when we look at a new product in a store we tend to think that the more features there are, the better. It's only

> once we get the product home and try to use it that we realize the virtues of simplicity. (Surowiecki 2007.)

The five issues described here are not to say that contemporary design theories and models are not useful. They are though restricted in their application, sometimes flawed by definition and thus of very limited value for the development of a personal design philosophy or an adaptable design process. They are simply the result of the existing flawed paradigm which defines design from the bottom up, from tools to concept, where said tools are themselves often created by fields external to design. This can only be changed through a deeper inquiry into the concept of design, at which point entirely new theories and models will need to be created.

It is important to note that all of this is also not to say that designers are never at fault in today's industry. There is the often raised issue that designers are not users of their own product, for example (Richardson 2006). The argument can be made though, that this will be better addressed after design is better understood in the industry and there are no external barriers to the design process. In the end, all of the above is not to place the blame on any particular stakeholder, but rather to describe the current paradigm.

In short, the design field itself is falling prey to an industry-wide issue, analogous to feature overload. Instead of realizing that designers need to be educated in very specific and new ways, i.e. redefining education and addressing directly the conflict between design and entrepreneurial thinking, the usual old models and theories, already developed in other fields, are used and users are called to help. It is simply avoiding the problem, whether intentional or not.

3.4 Designer-centered design and designer-controlled process

Unlike what many current ideas state, the process should be centralized around the designer and be supervised by him/her. Having a deeper knowledge about the user base and an extensive interaction with it, are both very useful and actually essential steps to be taken. However, to believe that a user is enough to create a design, is to state that designers are not needed. Admittedly, a user can very well design something perfectly acceptable, but that is generally only true on a limited scale. On the other hand, a designer must be able to deliver on a regular basis, on projects with high complexity and should be able to go beyond the understanding of the non-designer. It is the designer who will provide the thinking outside the box, where, in the field of design, the box is the users. As Erik Spiekermann asks, “Why is... bad taste ubiquitous?” (Gary Hustwit 2007). And while this does sound somewhat arrogant or elitist, it is actually neither and points to a rather obvious answer and a very practical issue. Bad taste is not ubiquitous per se. But there is a difference between a user and a designer. It is the latter who will be moving things forward, simply because of his/her aptitudes, training and constant involvement. This has nothing to do with who is smarter and everything to do with interest, education and practice. “It’s unfair to ask people who don’t have a sense of the opportunities of tomorrow from the context of today to design”, says Jonathan Ive (Prigg, 2012).

And, as far as supervision and control go, in the company, it is also the designer who will provide the consistency between products, between a product and its presentation, such as promotional material, and between the product and the company’s image. As Ive says,

> The fallacy of most companies producing industrial or consumer products, (...), is that they think of design as a frill you add on at the end, after the engineers have finished their work, rather than as part of the overall concept guiding the development of a product from the beginning. (Goldberger 2013, 2.)

Taking, yet again, a look at Apple, there is something to be said when one of the most successful companies from every possible perspective, lauded for its designs, ranking very high on user satisfaction, bringing huge profits, etc., is using a very designer-centered approach, has control over each part of its products and it is run in a way to give its designers a huge amount of freedom and control. It is a perfectly logical assumption that there exists a correlation between their success and how the company is run. As the Senior Vice President of Design at Apple, Jonathan Ive, puts it, “It’s difficult to do something radically new, unless you are at the heart of a company” (Frost 2002). Not to mention that, by having the proper system to promote creative thinking in the first place, this actually attracts creative people.

Given that Apple is such a strong and unique example, it does make sense to conclude that it is not easy to have this type of company, but also that it is entirely possible, even for a huge corporation, and it only stands to reason to follow their example. Not by copying their products and adding irrelevant features, but by copying their way of work.

From my own experience and research, design reaches its best effectiveness when used in a holistic and controlled approach, not as a separate part of the production or development processes. Being able to control everything from the basic idea up to the concept, the production and down to the marketing, certainly provides the best possible consistency and focus for any particular product.

This designer-centered and designer-controlled process should not be taken as some elitist notion, of course, but as a practical issue, having to see with what design actually means, as a whole, as a force to drive society and the world forward. To reiterate, it is not about which stakeholder is smarter, but about which stakeholder has the best aptitude and training to handle the task. While design will always be used to make more money, the concept should certainly go well beyond that. This will obviously require designers to become even more well-rounded

professionals with highly adequate education, which is not something that the actual system, as it is, can provide.

Looking at different fields, design is an outsider. It is a field that is not really a field, but the complement that will provide a different perspective. This, of course, requires quite a few aptitudes from the designer, for example, to be able to go quickly in-depth in any field. Not in the sense of pure knowledge, but rather to see the underlying structure. This type of aptitude is very special. It requires awareness, curiosity, inquisitiveness, constant exploration and a creative mind. It is these kinds of skills that are not currently properly addressed by the education system, in the sense that they are rarely taught directly and/or through a holistic approach. More often than not, education is specialized and focuses extensively on the tools.

To conclude, it is important to reiterate that a personal design philosophy defines, but is different from a design process (see Figure 1). At least, when it comes to this thesis.

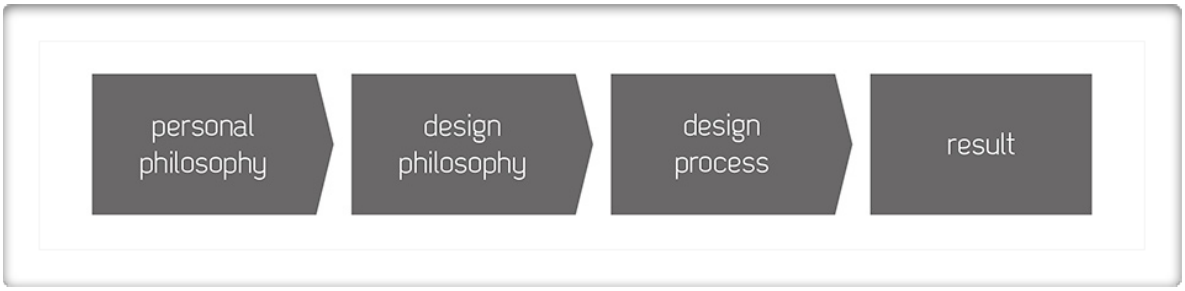


Figure 1. Order of development.

The reason these distinctions are made is to avoid the definition pitfall, described previously, where tools are often taken too far and start to transpire into design philosophy, thus limiting it, but also to show that current theories, models and discussions are simply centered around the narrow side of the practical process and often completely disregard the concept. A design philosophy is not a set of methods or tools. These are a part of the design process. A philosophy consists of

values and principles. To be a designer, one requires a design philosophy, methods and tools are secondary (even if necessary). These can be developed at any time, given a modicum of self-discipline. An appropriate analogy here would be a map and a terrain. One can walk without a map, and, while the map is indeed helpful and, by all means, should be used, it is not the terrain. What happens very often when things become too theoretical is that more and more maps are created by people who have never been walking. It is a vicious circle, which can only be broken by going out and exploring the terrain.

4 DESIGN : UNDERLYING CONCEPTS

A personal design philosophy can only be defined at a specific point of time, as it is always evolving. A logical assumption is made that such a philosophy will be influenced by the environment, by personal changes and, what is of most interest to this thesis, by a conscious effort to refine it. Thus, given the complexity of the concept, only several aspects will be discussed in the following pages.

Some of the aspects described here would look, at first glance, to be misplaced, to be rather a tool and not a part of the philosophy. Innovation is one example. The reason that they are a part of the philosophy is that they transcend any particular process, any project or any product being developed. These aspects require constant development and are too strongly tied to the state of things to be simply looked upon as being merely a part in a limited design process. Furthermore, while often being discussed separately in academia or in the workplace, as though they stand by themselves, they do not. They are interwoven and inseparable, which makes them both difficult and easy to approach, difficult because design philosophy is a broad issue, and easy because it is actually only one issue.

4.1 Awareness and observation

Probably the most important point to be made, relevant to any learning process, is about something that could be defined as awareness. Everyone today knows the rule from the bestseller of Malcolm Gladwell, titled “Outliers”, which stipulates that to become successful in any particular field, one must practice for ten thousand hours. While very disputed as to its precision, the validity of the overall idea seems intact, as there certainly is a point to be made about practicing something long enough. What is often not discussed, is that this kind of rule comes with a condition, namely awareness. To explain this through an example, a person could snap photos all day long and then share them with friends, and this for many years,

without actually learning anything. If that same person pays attention to what they are doing, takes carefully thought-out photos, after studying composition rules and color theory, and then shares them with photographers, the result will be entirely different. Awareness could possibly be likened to observation, an essential skill for any designer, but it goes well beyond that, as it implies pro-activeness. In that sense, observation is only a part of awareness.

4.2 Designer’s objectivity

“People's interest is in the product, not in its authorship”, says Jonathan Ive (Richmond 2012a).

Having a deep personal understanding of the world, visual history references and being able to analyze one’s own taste are of primary importance to a designer. There is, of course, nothing wrong with putting one’s personal view in a product and this is something that will always happen to some extent, but all of the above can get in the way of the design process at times. To be able to separate oneself from one own’s desires and views is what is sometimes needed. This is the only way to be optimally objective, which is of essence to several design issues. First, one needs to be able to properly influence the development of a personal philosophy and style. Secondly is the ability to properly conduct the evaluation of the appropriateness of the tools and methods used in the design process. Thirdly, and probably most importantly, is enabling a multitude of different perspectives for the designer.

As an example, a user could say “That feels right”, but a designer should understand why it feels right. Any designer starts as a young artist - confident that what he or she makes is the right solution. This is generally the reason why a person actually starts doing something in the first place. Over time, it becomes clear that one designs for someone and for something. At this point, there must be

an effort to take oneself out of the equation, i.e. to know oneself well enough so as to be able to see which decisions are being motivated by selfish[6] rather than practical reasons. This is, in other words, taking a step back and gaining a new perspective. A designer is always putting something of themselves in a design, but this should be a conscious decision[7]. Conveniently, developing one's objectivity falls in line with what is needed for enabling innovation, i.e. a consistent conscious effort to explore and analyze, partly based on the previously discussed awareness.

4.3 Approaching innovation

Every designer should be able to understand innovation in some way and to generate it at will. Innovation, at its foundation, is nothing more than new ideas, and it would be interesting to look where do these come from. In most theories, there is a general consensus that ideas are generated through inter-connections. "An idea is a network" (Johnson 2010). That network is highly dependent on the environment, be it human interaction, such as discussing a problem at the conference table, or horizontal knowledge, such as using solutions from another field. Ideas do not simply pop out of nowhere; there is a long period of buildup, resulting in that moment which we would call an epiphany, a eureka moment, etc. (Johnson 2010.). The question, for a designer, is then how to create such a productive environment and how to optimize it. Thankfully, the solution is quite straightforward, albeit difficult. It is the concept of connectedness, such as sharing ideas, exploring varied perspectives (as a direct result of objectivity) or various mediums, expanding knowledge of different fields, etc. All of these should be valued and consciously pursued. A good example of such an effort would be to develop several hobbies and constantly search for parallels between them. This first aspect of innovation can be defined as a combination of exploration (looking for things to connect) and awareness (actually connecting things).

---

[6] "selfish" is used as describing a person's taste and motivations

[7] there is something to be said about subconscious decisions in the design process, but the extent of the topic is too large to be addressed adequately in this thesis

Another aspect of innovation involves constraints. There is no design without constraints. Imposed limitations on connectedness can also enhance creativity, if not actually help create new ideas. The issue here is, which constraints should be applied. As a very simplified example, if there exists a product A, created with a set of constraints called C, then it is usual for a manufacturer to give the same set of constraints to the designer for a product B. This way we will very probably end with an iteration or, at best, an incremental improvement (which, depending on the project and its requirements, might be perfectly sufficient, but it is better to discuss in more absolute terms, as to what the optimal conditions are). Here comes the idea of starting freely as a first step in the design process: to go as crazy and as wide as possible, i.e. not only in-depth, but also laterally. Only then should one apply the given constraints and work with them.

As an analogy, one could look at a prisoner. His task would be to escape. If he is put into a cell without ever seeing the outside world, then not only it would be very difficult for him to escape (he does not know what obstacles lie beyond the cell), but he might not have the motivation to do it. On the other hand, if he lives a normal life and he is put in a prison later on, he not only will have the drive to escape, but also more knowledge to do so. This is the reason why constraints motivate, not by their own existence, but by the limitations they create to a pre-existing freedom. This freedom is connectedness.

Additionally, while it is extremely difficult (yet not impossible) to escape constraints, which we do not know exist, this is where really great design ideas come from. This is the reason why we see concept cars at expositions. They represent designs that are taken too far and will probably never be put into production. However, they are an essential part of the design process and serve as a research, and often particular aspects will be included in future products. This is, of course, not the research most fields are accustomed to. It is that same idea of going wide, expanded with a projection into a potential future, based on the current context.

4.4 Simplicity

“Simplicity is the ultimate sophistication” (Leonardo da Vinci)

Simplicity has always been an important issue in design. It has to see with every aspect of a product, but most importantly with the user. It is not a part of a style or a process, but rather a result of a proper understanding of all things essential involved. In a sense, it is achievable perfection, something every designer is striving for. It has to see with how intuitive, familiar and useful a product is. How closely it fits the existing paradigm or how it flawlessly changes it. In other words, something that fits immediately the user’s perspective.

> Simplicity is not the absence of clutter, that’s a consequence of simplicity. Simplicity is somehow describing the purpose and place of an object and product. The absence of clutter is just a clutter-free product. That’s not simple., says Jonathan Ive (Richmond 2012b).

This is the issue that will clearly benefit from a designer-controlled process: a holistic approach to product development, where development stands for going from the basic idea to the final product, a process that transcends the individual parts of the company, resulting in a focused solution.

Simplicity can be found through the designer’s aptitude of being able to see the underlying concepts of anything that he/she approaches. An aptitude that relies heavily on lateral knowledge (exploration) and connectedness.

4.5 Core result, design philosophy

An interesting point, reached as a result of the exploration of the concept of design, is about the idea of objectivity, discussed previously. It seems that the condition for designers to be able to explain why they like something or why they are making

certain choices cannot be realistically satisfied. There is always some intuitive, irrational or paradoxical part in the thought process. To a big extent, this probably has to do with the concept of uncertainty as described by James Self, i.e. a “design activity involves engagement with not only the unknown, as in the pursuit of knowledge in the sciences, but that which cannot be known because it does not yet exist” (Self 2012b). This certainly does not negate the usefulness of trying to achieve some level of objectivity, especially as far as evaluation of one’s own methods go, but it certainly puts a limit to any rational analysis.

This issue brings us back to current theories, models and definitions and provides yet another look at their flaws. It only reinforces the idea that a designer should engage in a personal exploration of the concepts underlying any design activity. As can be seen, the aspects discussed previously are all closely related and depend heavily on each other, through underlying concepts, such as exploration and awareness. Thus, unlike what is currently the norm, they should not be discussed as separate issues, but should be approached in a holistic manner, from the top down. Developing a style or ethics, for example, cannot be done separately, to then somehow lead to a patched up philosophy. Furthermore, rather than trying to define everything, especially some irrational aspects which would be actually impossible, some level of confidence should be developed in the designer, through experimentation and experiential learning.

There are more underlying aspects than the ones discussed previously, such as empathy, as expressed by Steve Baty:

> At its heart, design seeks to purposefully improve the lot of some segment of humanity through the enablement or improvement of some human endeavor. (...)
> Our tool here, and the vehicle for such understanding, is empathy. Empathy should be employed with eyes wide open to our surroundings, and the broader activity or purpose within which our 'problem' resides. From this vantage we have access to culture, personal motivation, meaning and significance. (Baty 2012.)

Other aspects would be ethics, motivation, style, taste, uncertainty etc. However, given how broad all of these issues are, this thesis concentrates more on the general idea of why having a design philosophy is beneficial and how it can be approached. The important point to be made here is that all of the above aspects are interwoven quite heavily, and if we are to dissect and define them, utter care should be taken to do so properly. Also, while in the industry the discussion often revolves around innovation, ethics, simplicity etc., these are not necessarily things by themselves, but might very well be only a manifestation of some combination of underlying aspects. That is why a holistic approach is the best choice.

To help with clearing up the connections between different issues, several diagrams were created with the hope of providing a more visual perspective to the design philosophy issue and its underlying concepts. An example can be seen in Figure 2[8], where simplicity and uncertainty are shown to exist as universal rules. Inside this paradigm, a designer first needs to achieve certain awareness, then move through connectedness and, in the end, build an understanding of how everything works together. The designer should also develop a style which is merely a particular selection of elements pertaining to each of the described aspects.

Given the complexity of the issue, the philosophy diagrams are all flawed in one way or another. Some aspects, such as ethics, have been left out temporarily for the sake of clarity; others have been simplified. However, the visuals are a valuable support for my thinking process and they do allow for both a better structuring of ideas and/or help to make some interesting connections among them.

[8] more explorative diagrams of the design philosophy aspects can be seen in Appendix 2

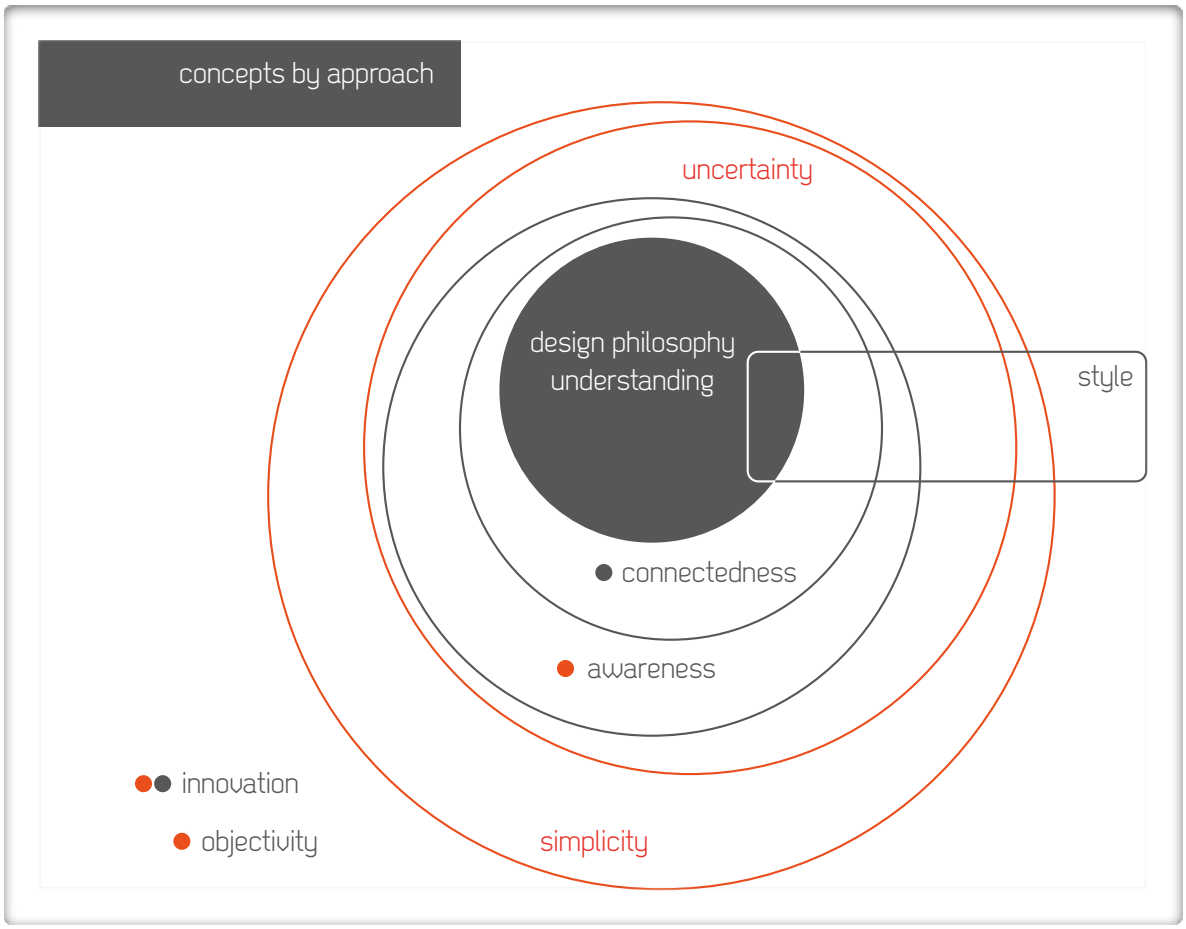


Figure 2. Diagram of the design philosophy aspects. Read from outside in.

As expected, there is not a definable result to this type of exploration. There are though observations that can be made. My view of the field of design and how to approach it have radically shifted. A better understanding of many issues related to design, both theoretical and practical, has been gained. As a whole, the research has been very valuable up until now, but may benefit from some guidance in the future. In the least, a more in-depth look at existing theories and practices has been achieved, something which would be helpful in a workplace and in keeping in touch with current trends and developments. Finally, this practical exploration serves to define my personal design process. While philosophy and process have been separated in this thesis to achieve a certain level of clarity, in reality they have been developed conjointly.[9]

[9] the link between them is discussed at the end of the next chapter “Design : practical process”

5 DESIGN : PRACTICAL PROCESS

5.1 Camera designs, the project structure

The process was organized in the following way. A camera concept design was chosen as the starting point for the process, simply based on its complexity and the large amount of work it required. This provided a fertile ground for discovering weaknesses in my approach. The project was only the first step of a process that is somewhat similar to practical action research. A series of projects were to be carried out, with an evaluation of the process and its results after each completion. To keep things consistent and to facilitate evaluation of any improvements made, the best idea was to continue on developing the same type of product, i.e. more camera designs (basically, iteration). To mitigate the potential pitfall of having the process wrapped around the same specific methods and tools, the type of camera was changed each time, as well as the objectives (to counter the effects of iteration). In total, there are four camera concepts, three of them entirely completed and one being still in development. An overview of the process can be seen in Figure 3.

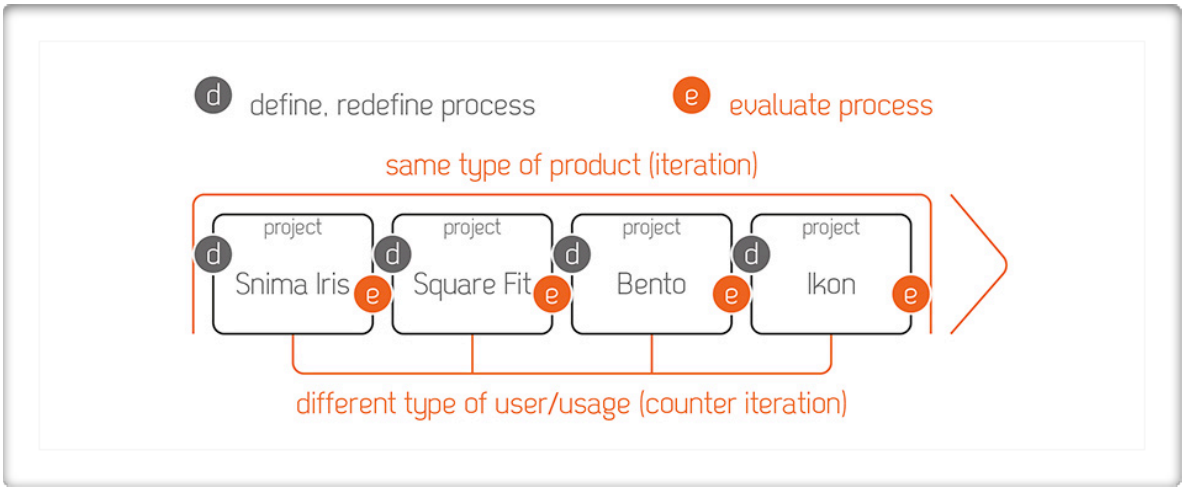


Figure 3. The process.

The first stage of the process was the creation of the concept named Snima Iris[10] (seen in Figure 4). The reason why a design has been created as a first step, rather than starting with research, was to achieve several goals. First of all, to generate discussion and feedback in the online photography community, something that would serve as the actual research. It was deemed that the response rate would be lower with questionnaires or other textual approaches[11], as photographers are, obviously, visual people. Another reason was to explore and evaluate a design process with input from only a few select users, i.e. to remain very designer-centered. Lastly, a first basic design process to have a starting point to improve upon was to be formulated.

Figure 4. Snima Iris camera concept.

[10] Snima Iris is the name of the first camera designed; “snima” means “takes a photo” in Bulgarian

[11] questionnaires were distributed for comparison purposes; an example of a questionnaire can be seen in Appendix 3

The second stage consisted of reviewing the feedback received. Given the rather large amount of data, it was necessary to organize it and analyze it before it could be used to improve or even redefine the design process. The idea was to structure it by type and validity. Different ways of organizing the data were explored and then it was compared to to the initial decisions made for the design, for the purpose of evaluating the process, its strengths and shortcomings.

The third stage was repeating the process all over again, this time with a different camera design, with the idea of using and evaluating the now improved design process. The second camera, named Square fit (seen in Figure 5), is a different take on an existing camera from Sony[12] and is targeted at a different audience, novices. The main objective was to make an easy to use camera for casual use.

Figure 5. Square fit, an easy to use camera, controlled by a smartphone.

[12] the Sony products in question are the QX10 and QX100 camera modules

The third camera design, project Bento[13], still unfinished as of this writing, is a modular design. This is the most challenging project overall, considering that not only does it need to be an advanced photography tool, but also that it should fit with a multitude of accessories, such as a removable grip, secondary battery packs, interchangeable lens mount and sensor, etc. At this point, the basic form of the camera and some of its features have been set, as well as the overall physical interface. Part of its development can be seen in Figure 6.

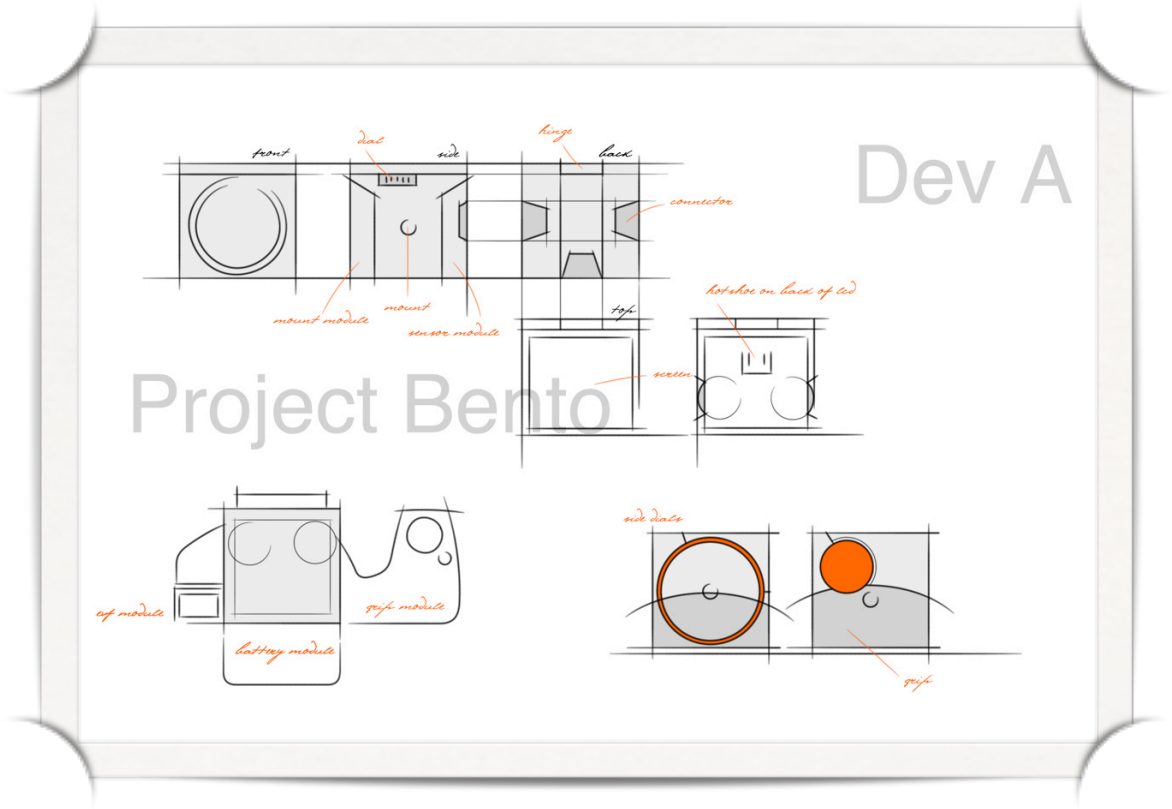


Figure 6. The third camera design, project Bento, still in development.

The fourth project, Ikon, is a redesign of a famous film camera, the Zeiss Ikon ZM, recently discontinued[14]. With no digital version in the works, the idea was to create one. The objective here was to not diverge too much from the original camera, to keep some of the styling, and most importantly to try to achieve a sleek and

[13] named after the Japanese lunch box, for its neat and careful organization

[14] Zeiss discontinued the camera in 2012

modern product while not taking anything away in terms of usability, but also not adding too much. The final render can be seen in Figure 7.

Figure 7. Ikon concept, fourth camera design.

During all four projects, the internet was used extensively and its usefulness as a research platform has been evaluated. It allows for reaching an impressive amount of people in a very short span of time, but it is difficult to control whom one contacts, and some criteria needed to be developed to help ascertain the validity of the feedback received. It was also used to build professional relationships, and while not as effective as a regular meeting, its usefulness was surprising. Many new contacts were created.

Throughout the exploration process, books, magazines, websites and movies on the topics of design and creativity were read and seen. Over time most of them were discarded, mostly because they were supporting the existing limited views or were simply irrelevant to this particular research. The focus slowly shifted to the

thoughts and opinions of prolific designers, found in articles and interviews, as they always were more to the point and practically useful.

The final direct purpose of the entire process was to create a flexible model to estimate requirements and costs for any type of commissioned project, to further clarify my personal vision of design and basically, to improve my design approach and skills.

5.2 Camera designs, how the actual process went

At the beginning, two years from the writing of this thesis report, my design process was significantly disorganized, as the Snima Iris concept was started as a personal project. It quickly evolved into something much more serious, with the help and support of several relations, both camera reviewers and photographers. Consequently, that meant reorganizing everything properly, down to the naming convention for the files used, and basically starting all over.

Organization has two basic points, that need to be always kept in mind - one positive and one negative. The positive is quite obvious. A well organized system provides clarity, which is essential in any project, but especially so in bigger, long-term and/or shared ones. The negative is less so. Organizing means putting things into boxes, which in turn separates them. Creativity, as discussed before, spurs from interrelating things. Connections make for new ideas, and organization can cut connections. And this is true on almost any level, be it the design process, the production process or the way how a company works. How many times have we seen a company getting bigger, being structured and divided so as to achieve clarity about who does what, only to end up being a dinosaur? And then, a small group of people in a start-up with less resources, begin bringing out new idea after new idea. Connections should be kept in mind and organization should not only be seen from the limited perspective of just clarifying the process.

At the most basic level though, i.e. the physical or digital assets, everything should be organized with no exceptions whatsoever. Connectedness does not really apply here. Sketches and drawings should be named and dated. The importance of this is clearly seen when working on a bigger project, where the amount of assets can build up very quickly. This is also so when using a previous project to advance a new one, where sufficient time has passed for the designer to forget which file contains what. And it is also essential in a shared workflow. This last part also means that any naming or organizing conventions must be approachable by others.

Given the extensive use of a computer, the following workflow example is concerned mostly with digital asset management. Physical assets are not much different to handle though and simply require common sense and a minimum of discipline. Files start with the project name, followed by the main part which is concerned in them and finished by date and iteration number. As an example, the file for the Snima Iris, which concerns the design of the lens and is on its 4th iteration could look like “SnimaIris.Lens.10112010.4”. Additionally, files related to the lens can be put in a folder called “SnimaIris.Lens” to keep things organized even tighter. But this should not affect the file naming convention, because naming a folder “SnimaIris.Lens” and then naming the file “Lens.10112010.4” is a bad idea. The logic of the organization is then limited to the file structure of the operating system. Making a simple search for a file or moving it, will simply result in chaos. Every file’s name should present as clear as possible what is in it, independent of file structure. While this may sound somewhat draconian, it is merely a quick example to make a point. Smaller projects may not require such a setup and bigger ones may benefit from purchasing specialized asset management tools.

After the structuring was completed, the main challenge of the first project, Snima Iris, was to introduce a coherent, intuitive and appropriate interface on the camera. Photographers in general like tactile controls, as this affords them the possibility to

operate the camera, without taking their eyes off of the viewfinder. This is where a software menu fails completely, as it makes very difficult to rely on muscle memory. The idea then, was to implement as many physical controls, as possible. And the challenge, obviously, was to do this on a rather small mirror-less[15] camera, while avoiding to create an ergonomic nightmare.

The first step was to get the dimensions of similar cameras and their components and have an approximate idea of how big the camera would be[16]. Here, the first difficult part was to implement a grip, comfortable enough for prolonged use, small enough to not make the camera too unwieldy and big enough to house a battery. A technical problem encountered during this stage was the lack of any relevant anthropometric data. That required reverse-engineering it by measuring a multitude of different cameras from different manufacturers and compiling the data, which in turn resulted in the discovery of an existing standard, dependent on the type of grip. This greatly facilitated work on the subsequent camera designs.

The next step was to design the actual analog interface. There were three major issues encountered. The first was calculating the dimensions of the buttons and dials, which was tedious, as yet again no information was available. Next were considerations about the location of the buttons, so they would be properly reachable, and the space between them, so they could not be pushed accidentally. The third issue was how to organize them, so specific photography-related functions can be carried out simultaneously and intuitively, for example, one-handed operation. All of these needed to be implemented simultaneously and this represented an important challenge. The problem was solved through a constant back and forth process between diagrams (as seen in Figure 8), a 3D model and a mockup.

---

[15] a mirror-less camera, unlike a regular DSLR (digital single-lens reflex) camera, does not use an optical viewfinder (simply a reversed telescope) which allows for significantly smaller designs

[16] the Snima Iris project was not concerned with engineering details and those were only considered as far as rough dimensions go

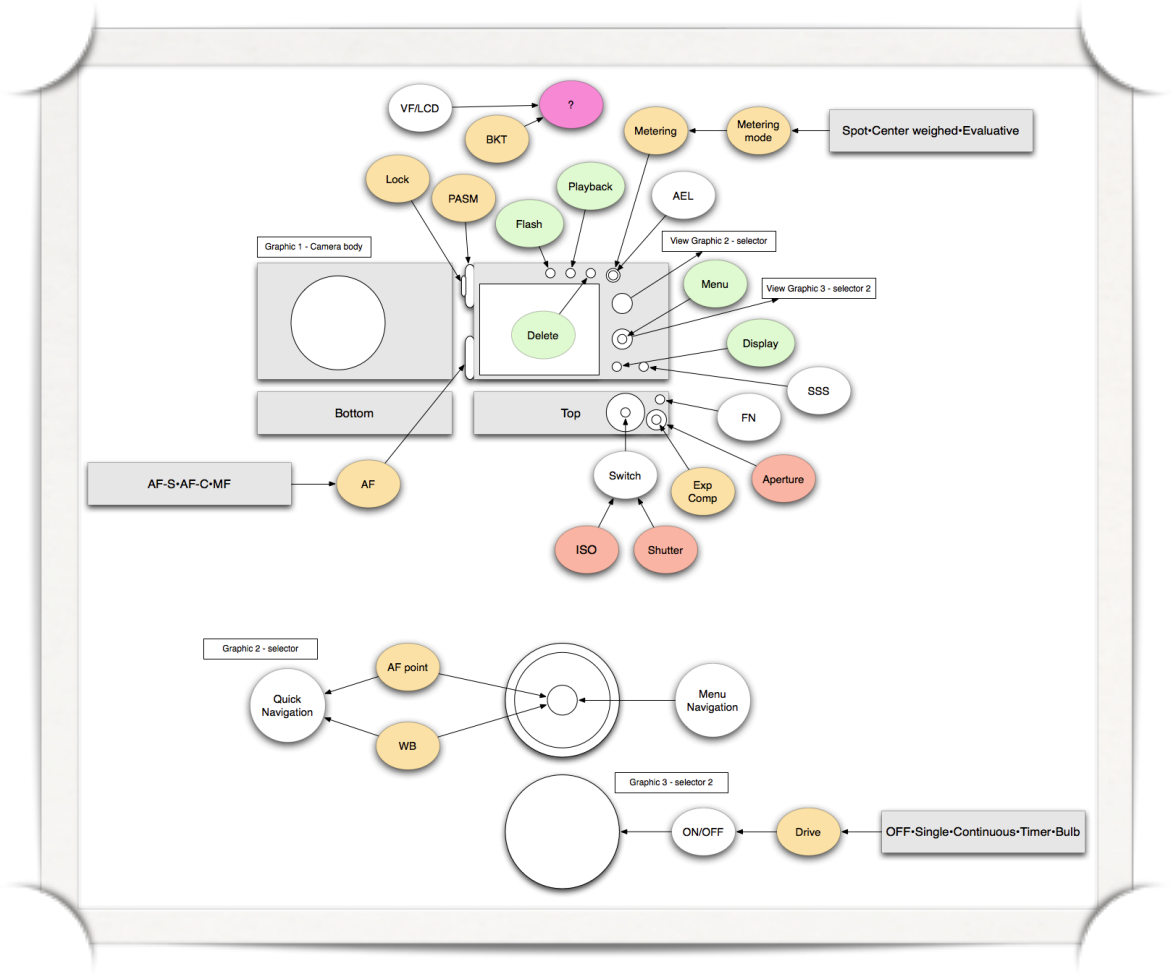


Figure 8. Part of the Snima Iris development process, button and dial functions.

Somewhat unsurprisingly, although there were a few very concrete differences, the result was very similar to existing cameras. This can be explained to an extent with the fact that the project targets a professional or, at least, a very proficient audience. It is difficult to introduce radical redesigns, as they could mean workflow redefinitions for the final user, not to mention that a big part of the interface has been refined over tens of years.

Mainly, the differences are on a smaller scale, i.e. refining different aspects of the physical interface and trying to implement new technologies more extensively than is currently done on existing cameras.

One of these differences is the design of the dials on the Snima Iris concept camera. The top ones can be seen in Figure 9. While top LCD screens have existed for quite some time already[17], their affordance is somewhat lacking. They only present information, without providing cues as to which buttons or dials actually control that information. This is further compounded on digital cameras by the way in which they generally work, i.e. that dials and buttons can change function based on the mode in which the camera is. The Snima Iris dials try to solve these issues by integrating the LCD screens inside the dials themselves, thus improving affordance. No matter what mode the camera is set to, the function which is controlled by each dial is clearly visible.

Figure 9. Snima Iris, top dials.

[17] some film cameras had LCD screens tens of years ago

Another effort to improve convenience can be seen in the side dials of the Snima Iris, shown in Figure 10. The lower one, controlling focus modes, has been oversized, so its setting can be seen not only from the side, but also from the back of the camera (thereby avoiding the need to rotate the camera to check the setting). Comparatively speaking, both dials are not that frequently accessed, which justifies their position on the side of the camera.

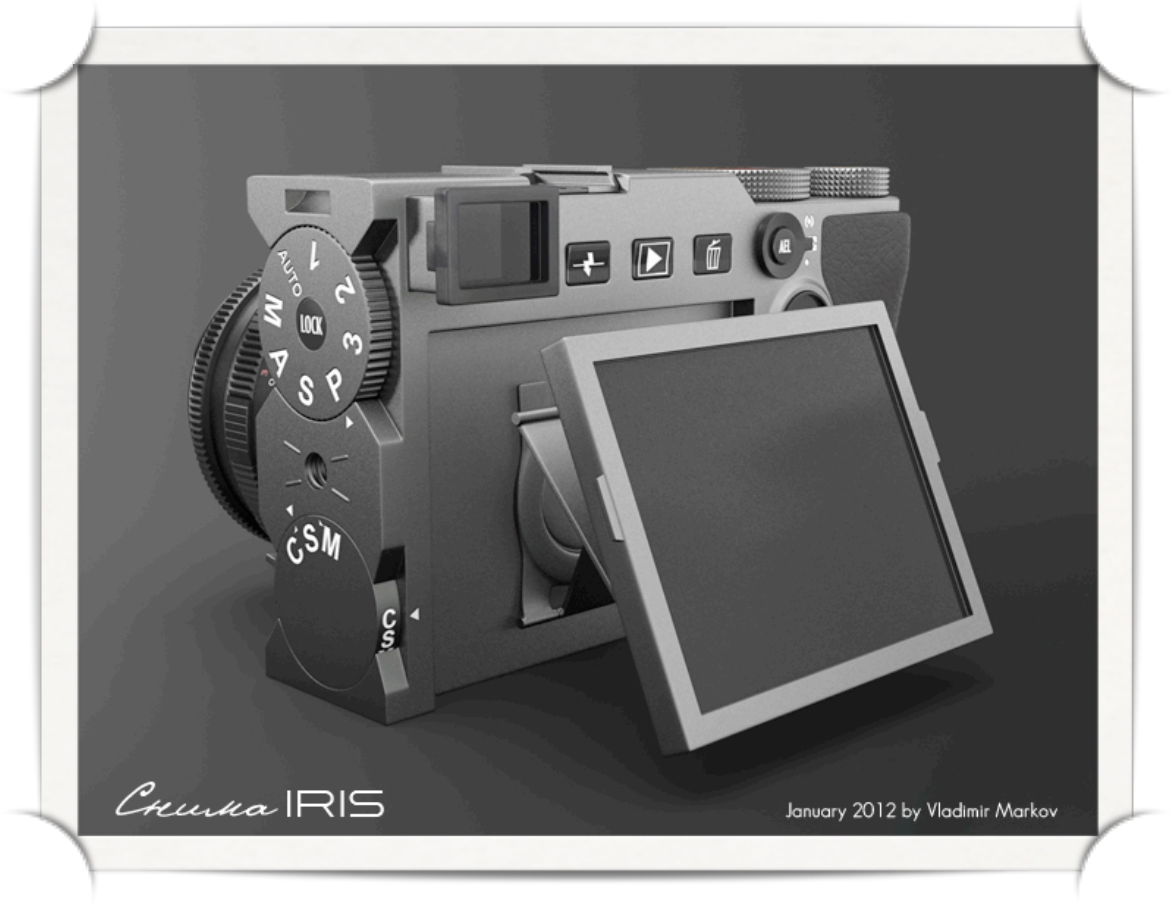


Figure 10. Snima Iris, side dials.

As previously explained, every project has different objectives, and the challenges encountered differed considerably. To avoid going into too much unnecessary detail and instead concentrate on the more interesting challenges, it is better to skip the second project, which was quite straightforward to develop, and the third one which has not been completed as of yet, and take a look at the Ikon concept. It is very similar to the Snima Iris, in that it is a small mirror-less camera for advanced photographers. The process was mostly the same, going through diagrams (such

as the one seen in Figure 11), clay mockups and 3D modeling. The objectives were entirely different though. The basic idea was to “translate” the camera from film to digital, i.e. to modernize it without losing its spirit. Most of this was achieved by simply keeping the different visual aspects consistent.

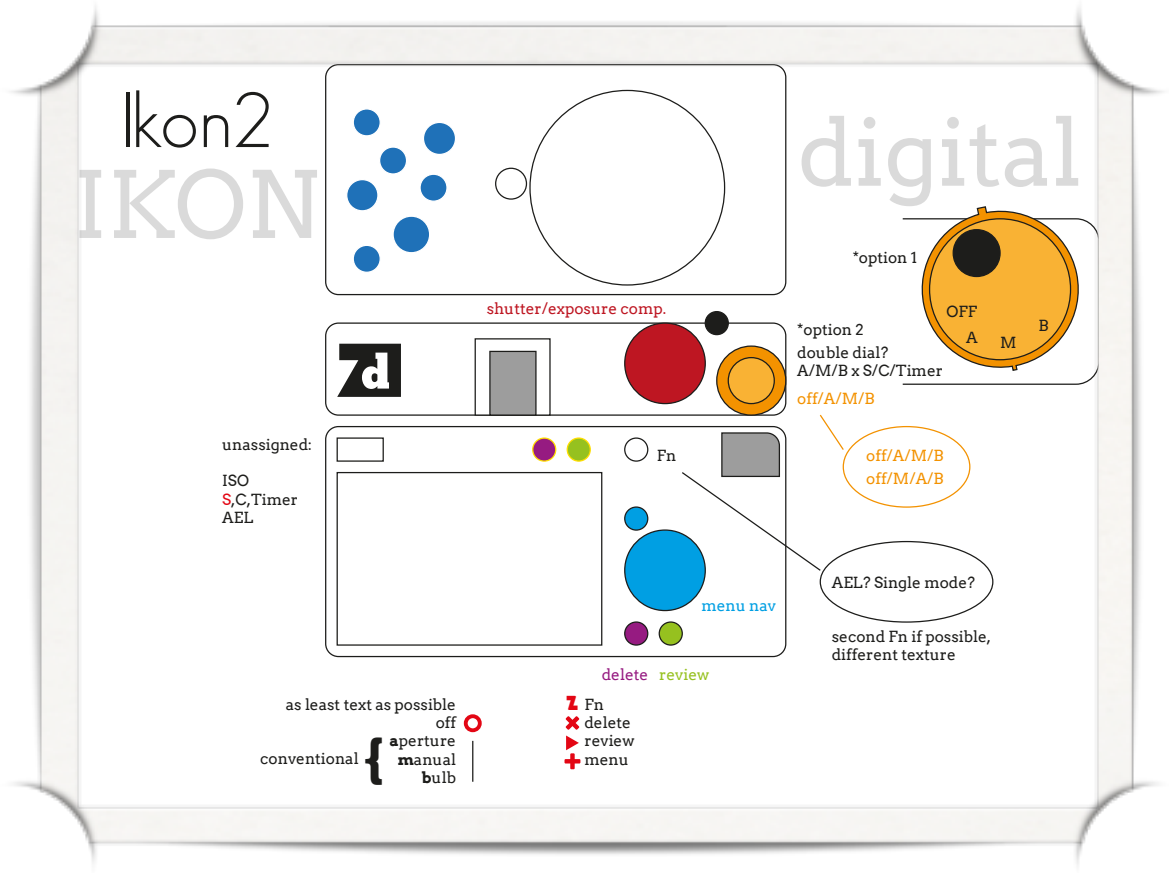


Figure 11. Part of the Ikon development process, button and dial functions.

The measurements done during the first project helped greatly reduce the time needed for the Ikon concept development, and it was easier to concentrate on the creative part of the process. The process ensured the dimensions were as precise as possible. The dimensions of the body were calculated based on existing digital cameras, the lens mount and viewfinder were precisely modeled, and buttons and dials were paid utmost attention to, as they were the main objective of this design. Probably the biggest challenge encountered was the implementation of the mode dial. As with the first project, engineering aspects were neglected for the most part, although openings were created for where the mechanical parts and electronics

would normally go. For example, the space behind the LCD is left entirely open (see back side of the camera body in Figure 12, the large rectangular opening), which would allow for easier assembly of the internal parts. Yet other precision details, such as screw holes, having to do with the actual manufacturing of the product have not been addressed for obvious reasons.

Figure 12. Ikon concept, camera body.

The reason why the mode dial was particularly problematic was because of the overall visual design of the camera. As previously stated, the visual appearance of the camera was of importance; that is why I wanted the top to be entirely flat, so as to achieve a very clean and functional look, i.e. to show the camera as a solid block of metal, which would give a feeling of sturdiness and simple elegance. Unfortunately, the best place to put the mode dial was exactly on the top. Given that the mode dial is actually a dial switch[18], it generally requires some effort to move, i.e. it requires a good grip. Furthermore, accidental switching should be

[18] also rotary dial; a dial that rotates in steps, not freely

prevented as much as possible. Many ideas were developed (some of which can be seen in the sketch in Figure 13), mostly having to do with making cuts in the camera (both on top and on one or two sides) to accommodate proper access to the dial. It was very important to not diminish usability for the sake of appearance, but, preferably, to address both at the same time.

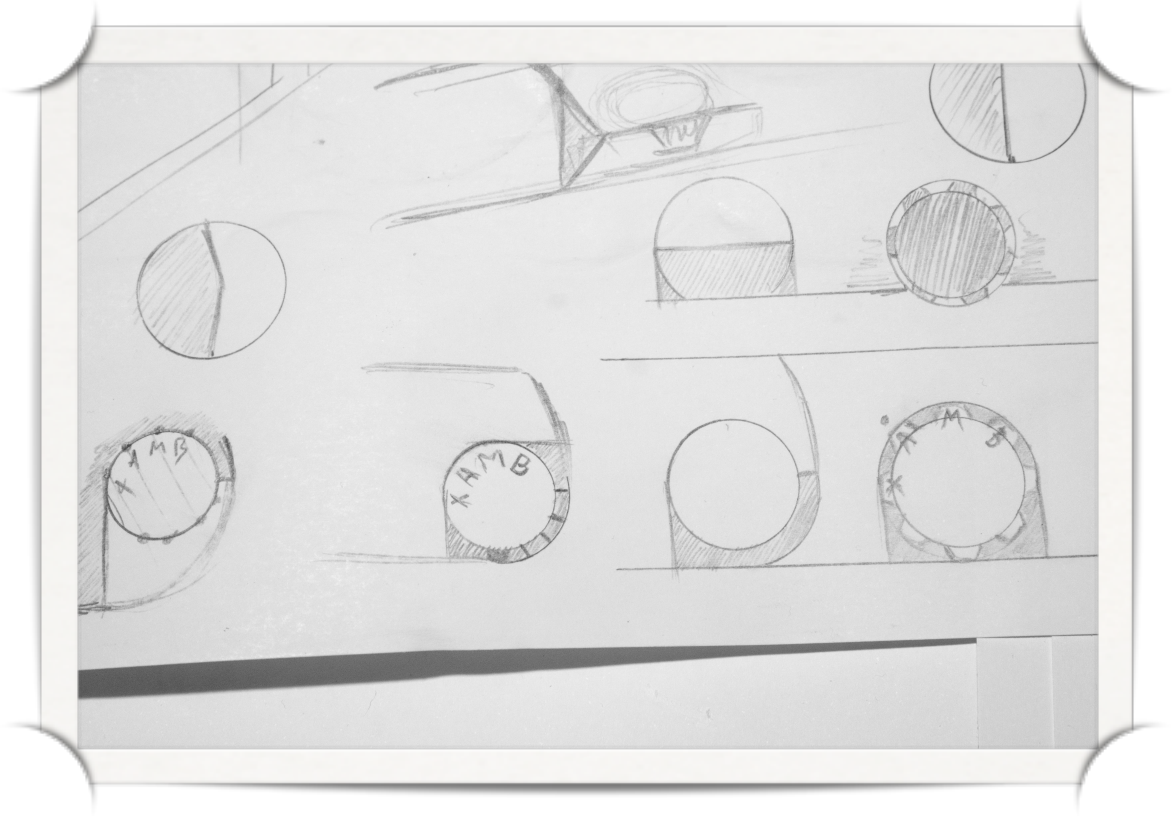


Figure 13. Quick sketches, basic ideation for the mode dial of the Ikon concept.

Finally, the idea to create half a dial was used, as seen in Figure 14. Such a dial requires a lot of space, because the sunken part (on top in Figure 14) needs to accommodate the tip of any size of finger, but also because, to enable rotation, the finger needs to properly catch on one half of the edge, depending on the direction of rotation desired. Thankfully, there was plenty of space available on the top plate and there were only four settings for the dial, so implementation was possible and straightforward. Thus, the top of the camera was kept flat, as desired, without any major cuts necessary, and usability was also preserved.

Figure 14. Ikon concept, mode dial.

Once the Snima Iris concept[19] was presented online, in the beginning of 2012, the response was overwhelming, as the concept was featured on a multitude of photography-related sites and many emails were received from photographers. Thus, the idea to use a visual support to generate feedback from the audience proved to be more than adequate and completely eclipsed the results obtained through the questionnaires.

At that point, the second phase of the project began. It was the organization of the feedback received. This also proved to be very challenging. Given that the feedback was received through the internet, evaluating its validity was of utter importance. The internet is a very efficient tool in terms of reaching a large audience very quickly, but also very tricky to deal with, as it is difficult to know and control whom one is receiving information from. This required both doing an

[19] the Ikon concept has not been presented to the public as of this writing

extremely tedious background check on everyone who posted a constructive opinion and also using specifically designed tools wherever possible. The latter proved to be potentially useful, but currently are not, as they are not yet advanced enough.

It was rather surprising to see that a lot of the feedback was concentrated on small and rather unimportant things, such as the quality of the render, which leads to two conclusions. One, people can miss the point of a design completely, even if it is clearly written and, two, people do pay attention to small details. This leads to one very important point. A product should be presented in a focused, simple and consistent way. In other words, the presentation of a product is as important as the product itself. My personal view that most people would not see small design features, especially when displayed on a website, has been strongly challenged, although one must take into account the very specific audience that has been addressed here - serious enthusiasts and professionals.

Small, well thought-out details will make the product stand out. This is very evident in the camera industry (although these are rare cases), where the level of maturity of most technologies has reached its peak, image quality is good from all manufacturers to the point of being irrelevant, cameras are rather over-featured computers, and most companies try to differentiate through very specific features. To reiterate a point made in the previous chapter, a well thought-out feature is something presenting proper integration with the product as a whole, not a simple afterthought, which would only result in feature overload.

5.3 Tools, digital versus analog, 3D versus sketching

For obvious reasons, using a computer extensively throughout all the stages of the design process is highly desired. Probably the single most important advantage is speed. Sketches and diagrams do not need to be redrawn completely after every

change that is made to them, 3D objects can be seen from any angle possible, rather than having a couple of angles drawn by hand. Technical data can easily be derived and introduced straight into a prototyping or even a production workflow. Everything can be saved and used later, without much concern about space and deterioration. This is not to say that traditional sketching, for example, does not have its place. It is certainly a very intuitive and convenient tool, but, in the modern world, the computer skills of a designer have the priority. Of course, there are exceptions, but this is an appropriate generalization, when looking at the industry as a whole. In short, the digital versus analog discussion is pretty clear-cut when it comes to sketching, diagrams, data organization etc. The projects described here were done using a computer and a tablet, with only the most basic ideation being conducted with sketches. Some sketches have been done in both analog and digital formats to compare the efficiency and flexibility of each method. The subjective conclusion is that only basic, non-colored sketches should be done on paper, while anything more complex or shaded should be done on the computer.

The issue of using sketches versus three-dimensional modeling is more ambiguous and subjective, and it clearly depends on the type of product, the specific part of the process and some other considerations, but, in general, a 3D software will always be the better solution overall.

There was only one task that could not be carried out on a computer and that was the anthropometric research, which required a mockup model of the camera. Wood, styrofoam and modeling clay were all explored and they proved to be extremely useful (Figures 15 shows the wooden base for the clay, used during the Snima Iris project). Modeling clay, more specifically proved to be an impressively flexible medium and, consequently, something that I decided to invest more time in. In comparison, existing 3D printing solutions are simply not up to the task in terms of flexibility and cost, although they do have their advantages and are becoming increasingly affordable.

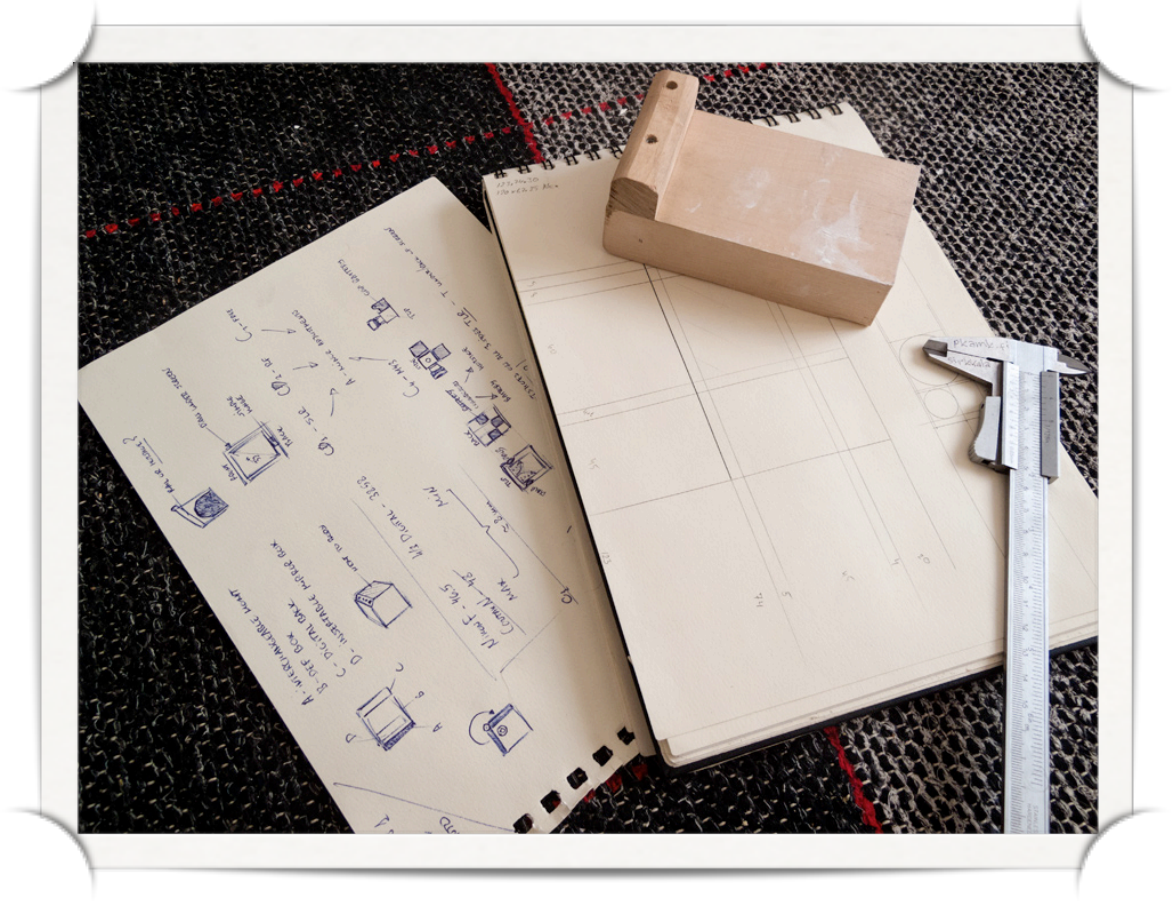


Figure 15. The wooden base, which is covered with clay to research shapes.

In the beginning of the design process, a wooden base shape was used, covered with air-drying modeling clay, which was a very time consuming process. This was subsequently changed to non-drying modeling clay (seen in Figure 16), which was significantly more convenient for rapid prototyping, not to mention cheaper overall, as it could be reused. The base was changed to styrofoam, as it is easier to work with than wood and clay sticks to it less. It is also cheaper.

Picture 16. Non-drying clay model, grip research.

Lastly, another tool which proved to be of importance was the work diary. It allows for the creation of a library of ideas and methods, represents a good reference for evaluating improvements and helps keep a certain clarity of thoughts.

In the end, it is of importance to note that the tool considerations presented here are entirely focused on efficiency and convenience, as described by a company workflow. However, the best possible approach is to not be constrained by the tools (Self 2012a). This would require proficiency in drawing, 3D, clay modeling etc. This is a very interesting point that has to do with the idea that the inherent limitations of the tool will also influence the project. Hence, being able to freely switch between different tools will certainly provide for a wider perspective.

5.4 Core result, the adaptable process

After the first project, Snima Iris, was completed, it already became evident that having one single process for approaching any kind of task is simply impossible, without it being far too general or too specialized and, as a consequence, useless in practice. For flexibility, it is needed to have something that is easily adaptable, no matter the situation. Adaptation is an inherent part of human history. It is making the environment one's own (a rather daunting task) or changing oneself to fit in it. It only makes sense then to have a design process that could be modified to suit the task at hand. Of course, the immediate question that should come to mind is how can one define an ever changing process? Fortunately, not everything changes or needs to be changed at the same pace. Tools and methods can remain relatively constant through long periods of time or through design processes for different products. It was deemed that it would be best to define tools and methods in small portions, which could be used as building blocks for a larger adaptable design process. A good analogy here would be Lego. Virtually anything can be built with it, and it simply relies on defined building blocks. The decision then was to create "bricks" - sets of methods and tools related to a specific task. This way, it is possible to put together these bricks any way one wants, depending on the task at hand. Each brick consists of tools and methods relevant to a specific part of the design process. The obvious issue was how to exactly determine what is in each brick, or to put it another way, how to split the design process in parts. This is a problem for two main reasons. First, it enters in contradiction with the holistic approach, because the moment something is defined as a separate part, categorized, its link to the rest is weakened. Secondly, the choice of appropriate criteria for the splitting presents yet another difficulty.

Thus, several ways of splitting the process were considered, ranging from a logical one, based on contemporary ideas of how the design process flows (concept stage, prototype stage, etc,) to a work type one, based on what type of work is

performed (sketching, computer modeling, mock-up creation, etc.). In the end, a very subjective approach was used, based on my personal design philosophy.

As it is often said, it is pointless to fix what is not broken. This could be seen in creating a new personal design process from scratch, only to have it fit better a random logical model. It is the model that should fit, not the other way around. I have done enough projects to have a good idea of how I approach a task. There are methods I am currently using, which work very well, and trying to break the process by an external type of logic will only serve to destroy them. Instead, it is beneficial to try to reinforce one's existing strengths and improve the weaknesses. With that in mind, it was completely straightforward to split the process, by simply looking at my existing process.

To begin, it was important to put the existing process in order - having a schematic of its building blocks. This involves looking at what works and what does not. Generally, people know what the problem is, in my case this being mostly motivation and organizational skills. The issue is most often how to deal with it, and the reason why many fail to succeed in improving is the lack of understanding that most of these problems are actually only symptoms of something else. In my particular case, motivation issues are actually the result of misunderstanding how motivation works. Before, it was simply a matter of waiting for inspiration to strike and work as long as it is there. During the research and exploration processes though, it was discovered that motivation can be consciously generated (or bypassed), through specific training.

Once the initial bricks were set, they were reviewed after each camera project, refined, redefined, created and deleted. The current state of this development will be presented here in its simpler form[20]. The adaptable design process consists of building blocks called "bricks". Each brick consists of two sets of tools. The first one is "Process tools", i.e. methods, models and theories. They are intangible. The

[20] a complete diagram of the process can be found in Appendix 1

second set is "Practical tools", consisting of what is actually needed to create sketches, prototypes, etc. This second set has two aspects, time and cost. These are simply averages that are recalculated after each project. This way, one has a good estimate of how long the specific brick takes to complete and what it costs. It does require that the designer keep track of their time and expenses, but this should be done anyway, especially in the case of freelance designers. The general structure of a brick can be seen in Figure 17.

Figure 17. The structure of a process brick; bricks stem from the design philosophy.

Currently there are eight defined bricks. They are separated into two groups, depending on their nature, as seen in Figure 18. The first one is considered to be expanding, where the goal is to generate opportunities and ideas. The included bricks are Innovation, Ideation, Rapid Prototyping and Research. The second group consist of the distilling bricks, or the ones that help narrow down potential solutions. It is made of Feedback, Presentation, Prototyping and Analysis. These eight defined bricks are merely the most current ones, but they will go through more development over time and will probably be split in smaller parts.

As a concrete example of how my design philosophy helped with splitting the process, one could look at the bricks named “research”, “innovation” and “ideation”. As discussed in the previous chapter, two concepts underlying several aspects of a design philosophy are exploration and awareness. The former, being a broad issue, is split into two bricks, “research” (familiarization with the type of product that has to be developed) and “innovation” (looking at other types of products, which

may potentially provide new solutions). The latter, awareness, is presented in the brick named “ideation”, which will rely partly on the two previous bricks. Without this research in design philosophy, there were only two viable alternatives as to how to split the process, both of them hardly optimal. The first one, defining the bricks by the tools used would be absurd, as some tools can be used throughout many different tasks or they can differ depending on the product developed, while still being relevant to the same task. The second way of splitting the process in parts would be by some type of logic external to my design philosophy. This would actually mean looking at approaches either external to design or defined by others, both of which are not of great use for developing a personalized process.

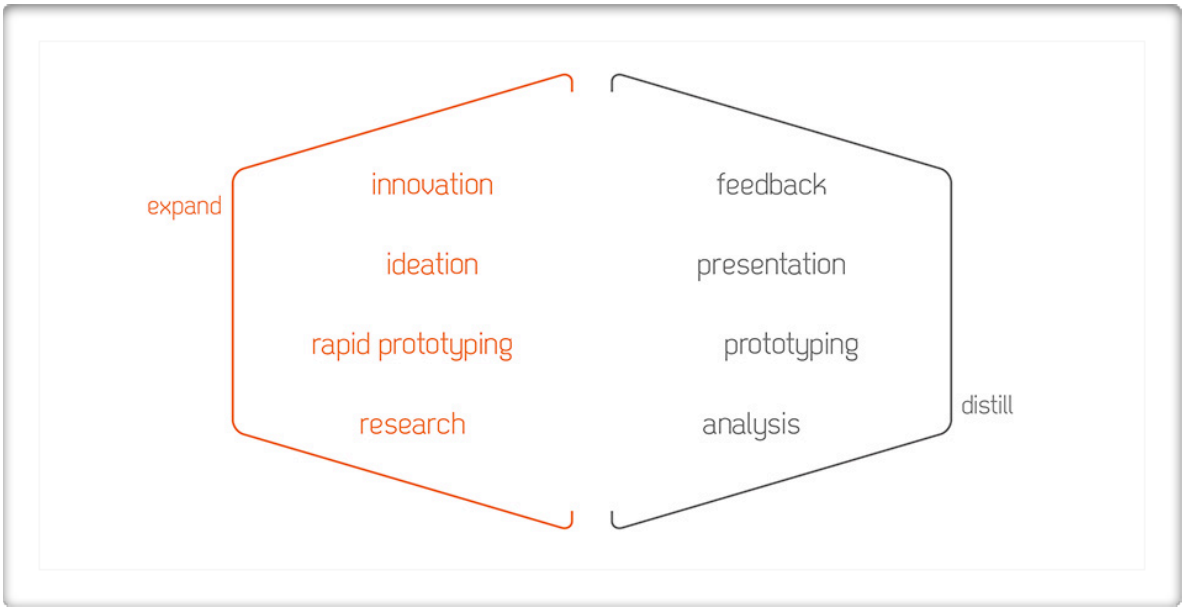


Figure 18. The different types of bricks currently in use and their aspect.

Using the bricks, almost every type of product development can be tackled and bricks can be added, subtracted or modified to suit the task at hand. This creates a very clear and structured view of the process that the designer needs to go through. Additionally, with the averages of time and cost, it helps make usable estimates to share with the client, very early in the design process, if not on the first meeting.

The process is extremely adaptable. It can be used for huge projects, by merely adding bricks together and for very simple ones, by skipping bricks where the complexity of the project is too low to require a complete set of tools. Iteration can also be easily achieved on two levels: one, inside the brick, on a smaller scale, such as going back and forth between sketching and 3D during the ideation process, and two, by repeating a brick in the process, on a bigger scale, such as going twice through prototyping.

In the end, the brick solution seems to have significantly more advantages than disadvantages, so further development only makes sense. There are many aspects that are still not addressed in it and will probably be added over time. Most importantly though, this structure helped me enormously to improve my organizational skills.

5.5 Core result, new ideas and questions

As with any exploration, the result is often not only answers, but also even more questions. An interesting idea that should be investigated, is how much of an influence the intangible tools, created by the design philosophy, and tangible ones, such as a pen, a computer, modeling clay etc., will have an influence on said philosophy. While it does sound somewhat like a chicken and an egg causality dilemma, it probably is not, at least not in the beginning, but certainly seems to become one in the longer run. This is an idea worth exploring in the future. Of course, such a research would only be possible through a holistic approach, given that the issues cannot be properly separated, without affecting their supposed constant interaction. The existence of such a causality will not change the necessity of having a design philosophy or its priority over the practical tools. It will though provide for a deeper exploration of how to develop it properly and, possibly, for a yet more involved understanding of design as a concept.

6 CONCLUSION

As a conclusion, there are two major points to be made, one related to design as a whole and as a concept, and the second to the design process specifically.

First, definitions, methods and models are only tools. They are essential parts of a professional design workflow, but are not design itself, as design goes well beyond them. In Economics, the distinction between methods and models, and the actual real world is very clear. That is how it should be in any field. This avoids the pitfall of being able to see only from a single perspective, i.e. “when you only have a hammer, everything you see is nails”. Unfortunately, design as a proper field, with its definitions and theories, is comparatively new and it still does not have its comfortable place in the industry. There is not a definite answer to what constitutes a good design philosophy. However, given that it serves as the basis for the design process, it only makes sense to develop one and refine it. Philosophy and actual process should be kept separate, even though they clearly may influence each other and that the latter is built on the former. Changes to both should be carried out simultaneously.

This is why a discourse on the concept of design is required, about its role and implications in both society and the world, a global perspective. Such a discourse can only be started by designers, by their willingness to go further in their personal development through analysis and exploration, and ultimately a development of a personal design philosophy, which should be constantly adapting, following the evolution of the surrounding world.

Secondly, it seems rather counter-productive and even impossible to have a single design process for any type of product. What is possible though is to create a set of guidelines and working methods that can be used in different configurations. By having a set of building blocks, one can rearrange them according to any situation.

Basically speaking, a set of tactics, that build into a strategy. This serves two main practical purposes - to help organize the workflow very tightly yet flexibly, and provide a good idea of all that is needed for an existing project - from tools to time. Such a customized process can be essential in both smaller and bigger scale projects, and also for smaller and larger teams.

On a less personal level, existing theories and models certainly have their use in the current state of affairs. They should be looked upon critically though, as they rarely represent a part of a whole, but are rather a mismatched pattern of ideas borrowed from other fields and forced to work in a pre-existing workflow. Design will become increasingly important over time and will ultimately reach its golden age, one way or another, but, to facilitate this transition, it would be beneficial for designers to start defining their own field and not let companies and users do it for them.

REFERENCES

Baty, S. 2012. The character of design. Core 77 magazine.
http://www.core77.com/blog/articles/the_character_of_design_by_steve_baty_21975.asp

Bierut, M. 2007. Seventy-nine short essays on design.14. Princeton Architectural Press.

Blank S. 2010. Death by competitive analysis. Blog.
http://steveblank.com/2010/03/01/death-by-analysis/

Dediu, H. 2013. The innovator's curse. Asymco.
http://www.asymco.com/2013/08/26/the-innovators-curse/

Frost, C. 2002. Jonathan Ive : Apple of the iMac. BBC News.
http://news.bbc.co.uk/2/hi/uk_news/1768724.stm

Goldberger, P. 2013. Designing Men. 2. Vanity Fair.
http://www.vanityfair.com/business/2013/11/jony-ive-marc-newson-design-auction

Hustwit, G. 2007. Helvetica. Feature-length documentary.
http://www.imdb.com/title/tt0847817/

Hustwit, G. 2009. Objectified. Feature-length documentary.
http://www.imdb.com/title/tt1241325/

Johnson, S. 2010. Where do ideas come from?. TED video presentation.
http://www.ted.com/playlists/20/where_do_ideas_come_from.html

Medich, J. 2009. Six questions from Kicker : Jack Schulze. Kicker Studio.
http://www.kickerstudio.com/2009/05/six-questions-from-kicker-jack-schulze/

Nielsen, J. 2001. First rule of usability? Don't listen to users. Nielsen Norman Group.
http://www.nngroup.com/articles/first-rule-of-usability-dont-listen-to-users/

Norman, D. 2005. Human-centered design considered harmful. Nielsen Norman Group.
http://www.jnd.org/dn.mss/human-centered_desig.html

Prigg, M. 2012. Sir Jonathan Ive : the iMan cometh. London Evening Standard.
http://www.standard.co.uk/lifestyle/london-life/sir-jonathan-ive-the-iman-cometh-7562170.html

Richardson, A. 2006. Palm got it right ten years ago. So why are we still suffering? Blog. http://richardsona.squarespace.com/main/2006/3/29/palm-got-it-right-ten-years-ago-so-why-are-we-still-suffering.html

Richmond, S. 2012a. Jonathan Ive interview: Apple's design genius is British to the core. The Telegraph. http://www.telegraph.co.uk/technology/apple/9283486/Jonathan-Ive-interview-Apples-design-genius-is-British-to-the-core.html

Richmond, S. 2012b. Jonathan Ive interview : simplicity isn't simple. The Telegraph. http://www.telegraph.co.uk/technology/apple/9283706/Jonathan-Ive-interview-simplicity-isnt-simple.html

Self, J. 2012a. CAD versus sketching. Why ask?. Core 77 magazine. http://www.core77.com/blog/education/cad_versus_sketching_why_ask_by_james_self_21844.asp

Self, J. 2012b. To design is to understand uncertainty. Core 77 magazine. http://www.core77.com/blog/articles/to_design_is_to_understand_uncertainty_by_james_self_22969.asp

Surowiecki, J. 2007. Feature presentation. The New Yorker. http://www.newyorker.com/talk/financial/2007/05/28/070528ta_talk_surowiecki

Wood, J. 2012. Why user-centered design is not enough. Core 77 magazine. http://www.core77.com/blog/articles/why_user-centered_design_is_not_enough_by_john_wood_23465.asp

All internet sources were last accessed on 13.12.2013.

Diagram of the current stage of the personal design process

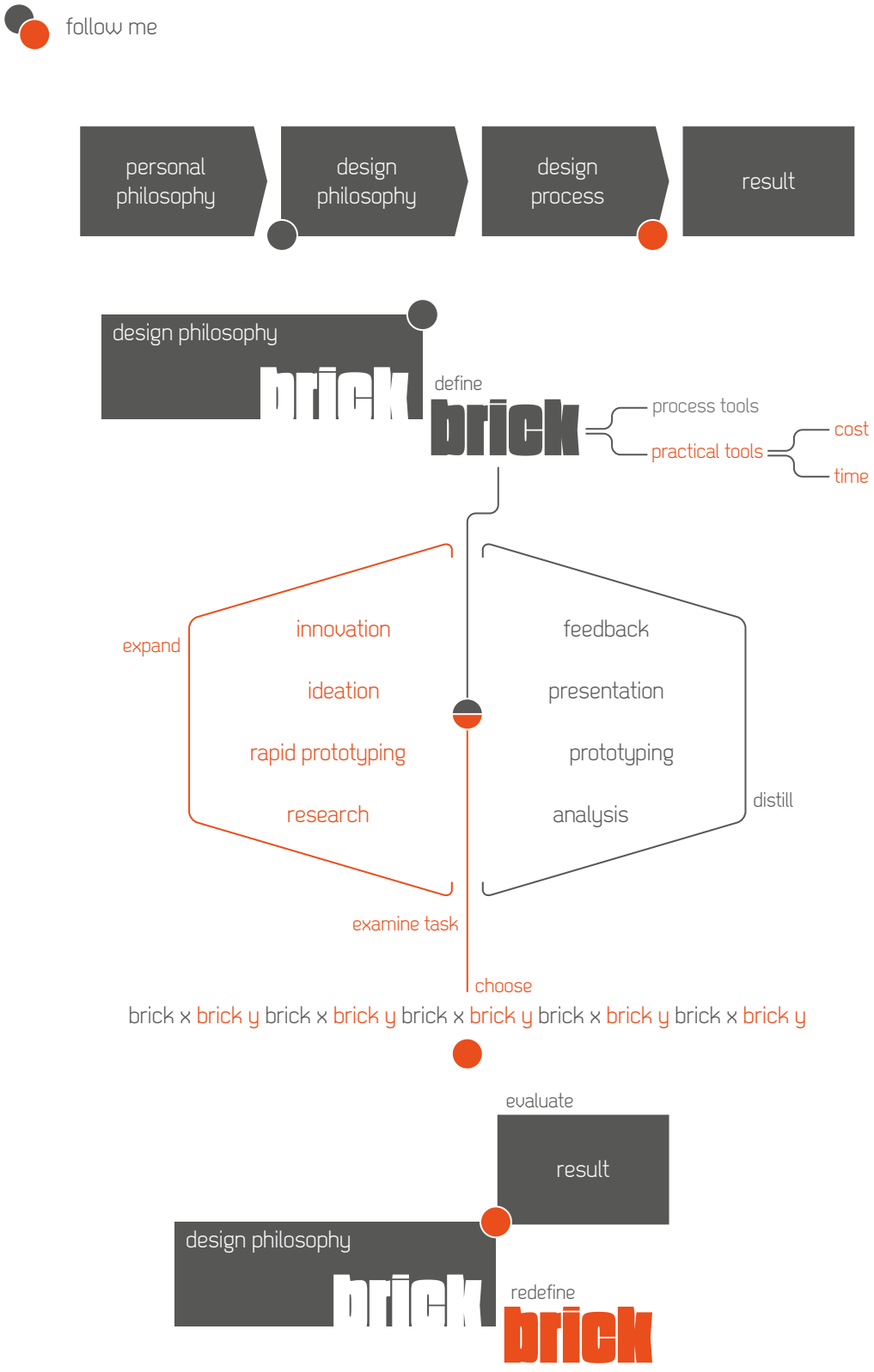
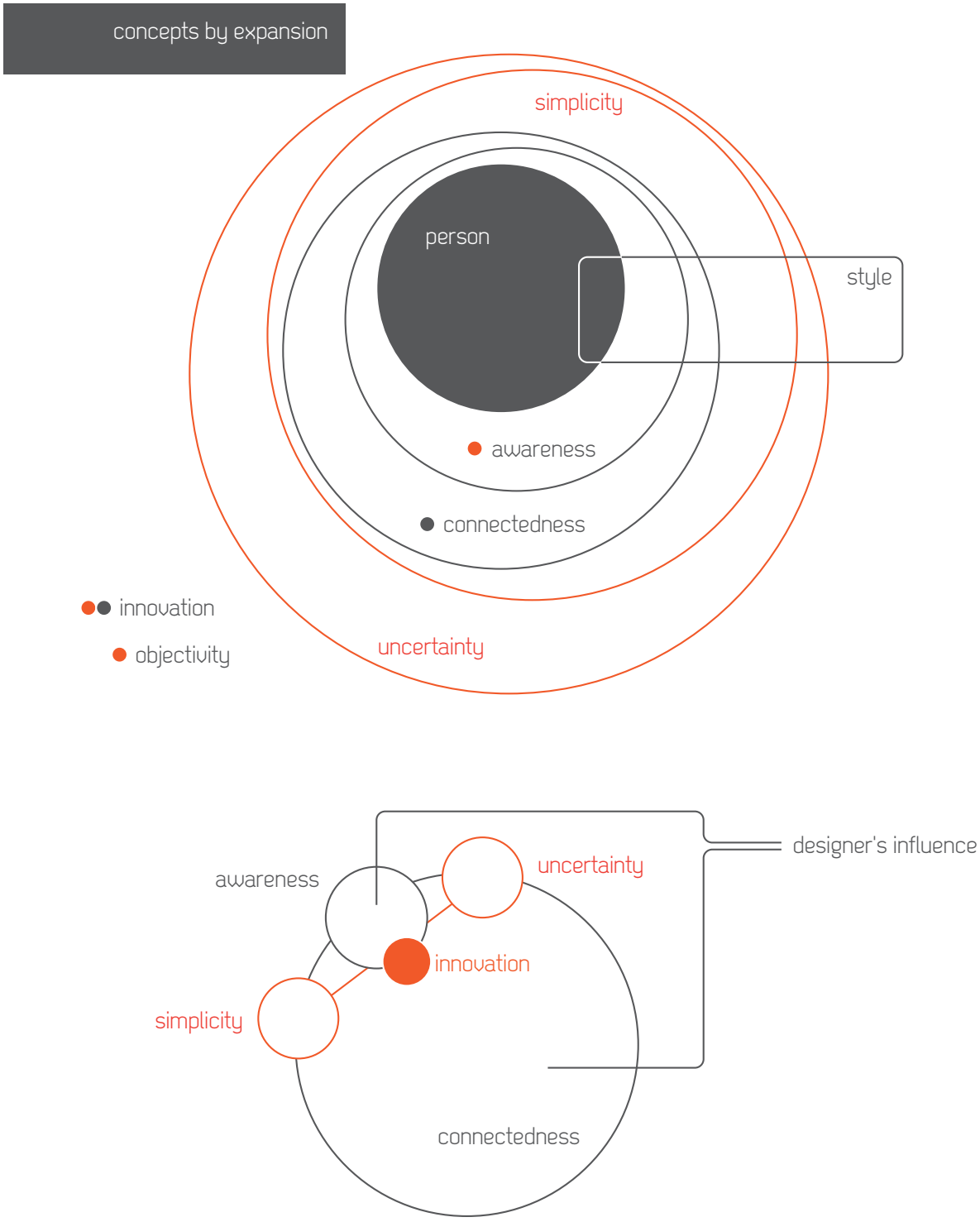


Diagram of design philosophy aspects



Example questionnaire

Questionnaire A

Brand and camera model you are currently using:	
Brand and camera model you are currently using (secondary):	
Brand and camera model you are currently using (tertiary):	
Your 3 most used lenses (brand, focal length, max aperture):	
Your 3 favorite lenses (brand, focal length, max aperture):	

Your most used shooting mode:	P	A	S	M	Video
Your preferred types of photography: (maximum 3; if possible, in order of preference)	1. portrait 2. landscape 3. wildlife		4. sport 5. street 6. performance		7. macro Put numbers here:
Your preferred types of lenses:	primes		zooms		
In case you use primes, state why:	image quality		size/weight	other:	
Your preferred way of focusing:	autofocus		manual focus		

Write in order of importance:	1.lightweight	2.grip	3.size	4.button layout	
Write in order of importance:	1.image quality	2.handling	3.size/weight	4.features	

Do you follow business news concerning camera manufacturers:	yes	no
Do these news have an effect on your purchases:	yes	no

What features in your primary camera you think are well implemented and why:

What features you think are badly implemented in your primary camera and why:

What features are you missing mostly in your primary camera:

In case you have indicated a secondary/tertiary camera above, from a different brand, what were the reasons for choosing another company:

Hypothetically, if you were starting from scratch today, which brand and camera model would you choose and why. Please, be realistic about your own budget. (you can estimate the resell value of your current gear and put it towards this budget)