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A NEW LANGUAGE FOR SKETCHING THE INTANGIBLE; BUILDING ON A MUTUAL FUNDAMENT

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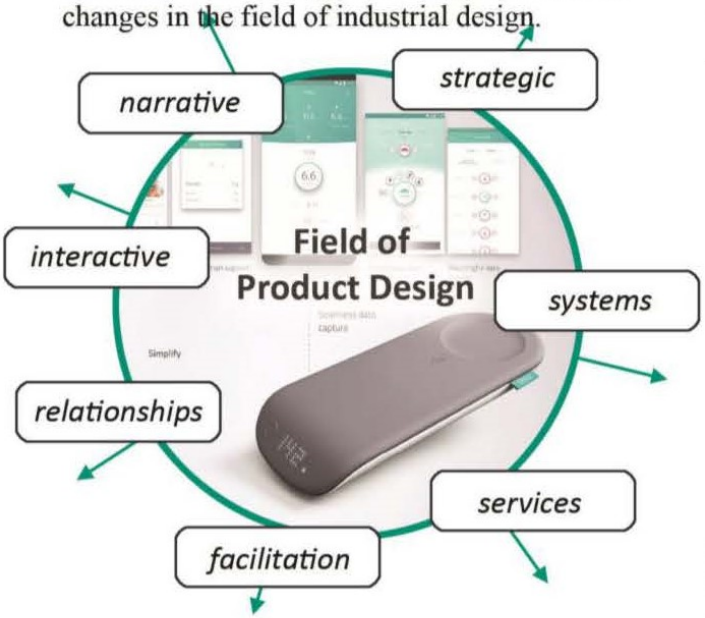
ABSTRACT

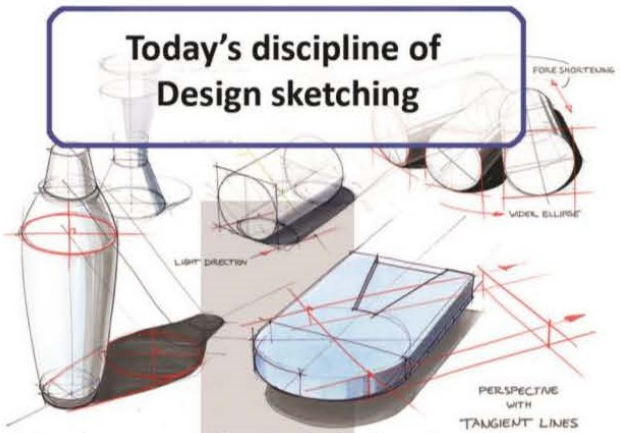
A new sketching language
This paper discusses the developments within the discipline of design sketching, in relation to changes in the field of industrial design.



Similarities with graphic novels
As a consequence, additional sketching methods are needed (similarities in comics). Aspects to consider are:
-The time factor (sequential),
-Characters,
-Simplification, abstractness,
-Indication of relationships

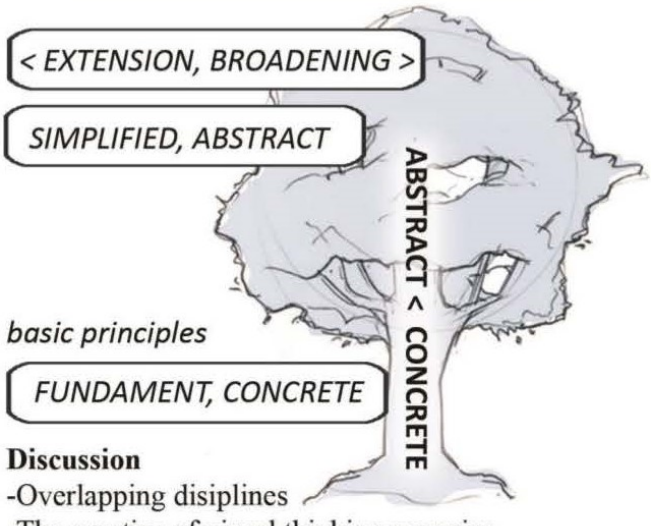
Storyboard and system of interaction

Changing the method for design sketching?
To anticipate changes, there is a need to define an additional sketching language. *Question: 'How to anticipate changes within the design field, when sketching is concerned?'*



Maintain assets of today's design sketching:
Fundament, lines, construction, perspective, viewpoints, position, light/dark, spatiality, composition, Gestalt

Proposal of an extended language for design sketching



figures: Zhang, Carelsberg, Laagland, Hoftijzer

Discussion
-Overlapping disiplines
-The practice of visual thinking agencies
-Simplifying requires mastering the subject

Keywords: abstract sketching, visual thinking, drawing, visualization, narrative

1 INTRODUCTION

In the expanding field of product design, the core design discipline of 'design sketching' is expanding as well: from merely product design sketches toward systems- and service design sketches: 'sketches of the non-tangible' (Corremans and Mulder-Nijkamp 2019, Hoftijzer, Sypesteyn et al. 2019). The expansion is aligned to a larger trend that concerns the visual medium in general: imagery is becoming central to communication and meaning-making (Felten 2008). This expansion is now being referred to as visual thinking or visual design thinking.

Today's literature (Robertson and Bertling 2013, Brand 2017) concerning the two categories of sketching show little overlap (see Figure 1). This paper attempts to indicate that both categories have similar goals, should be aligned more, and therefor require a mutual fundament of visual literacy.

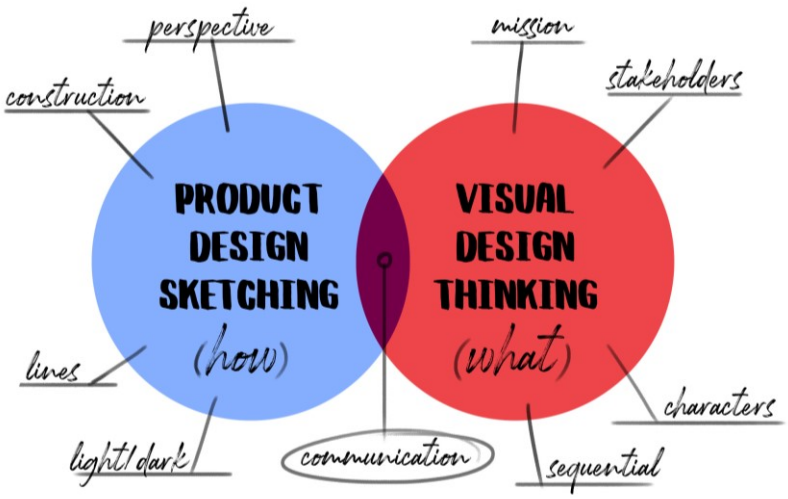


Figure 1: Overview of topics currently discussed in literature and textbooks

Furthermore, this paper suggests that the non-tangible design sketching vocabulary has many similarities with cartoons; designers should gain an understanding of the medium and learn from its qualities. In fact, literature suggests that simplification is very efficient for sketching in a complex and abstract solution space (Hsu and Wang 2018).

1.1 The expanding field of design and sketching

Whereas Goldschmidt (1991) refers to 'traditional design sketching (that is) evolving into visual design thinking', it is rather an 'expansion' of the discipline, as discussed in the previous paragraph. The additional sketching elements concern the (additional) design aspects of e.g. 'strategy', 'interaction', 'relationship', 'narrative', 'service' and 'context', all complementing the product design process as such (see Figure 2), depicting aspects that go 'beyond' the product.

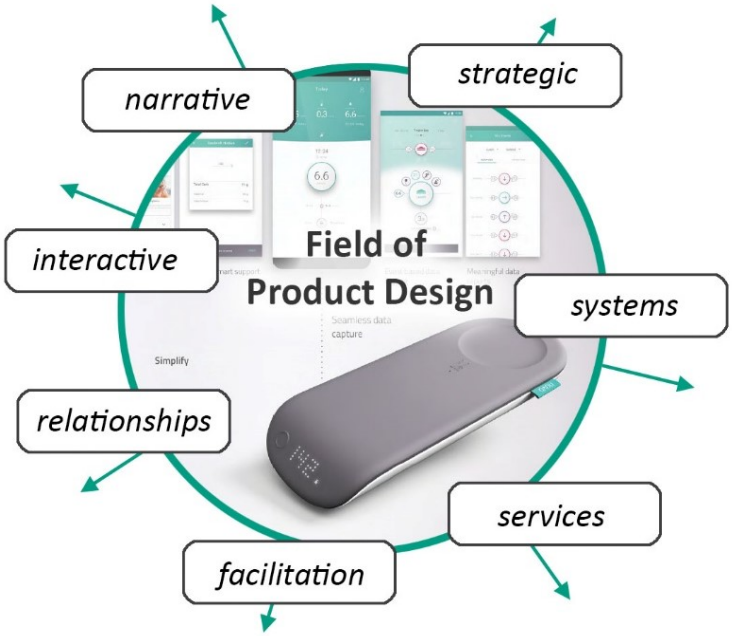


Figure 2: Extension of the traditional field of product design (pictures used from V. Laagland, TUD)

Most books focusing on this developing discipline of 'visual design thinking' do not refer to literature on product design sketching, that focus on the 'how to draw' methodology of sketching (Figure 3). Examples of these 'how to draw' textbooks are e.g. the ones of Eissen and Steur (2009), and Robertson and Bertling (2013).

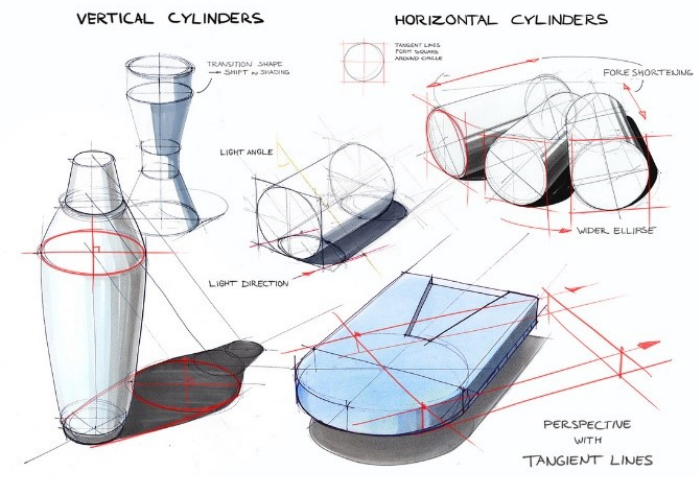


Figure 3: Constructing cylinders according to the typical product design sketching methodology

In fact, literature on 'visual design thinking' (e.g. (Roam 2008, Brand 2017) – focuses on the 'why', or 'how to think' methodology of sketching. The agency XPlane (2020) illustrates this design sketching approach clearly, see Figure 4.

Figure 4: A page from literature on 'napkin' design sketching (XPlane 2020)

1.2 The gap

Generally, in literature, no connection is made between product design sketching and 'visual design thinking'. Moreover, as can be concluded from comparing both these sides of the spectrum (napkin sketches in Figure 4, versus product design sketches in Figure 3); these types of sketches are different in many ways. Some of the most apparent differences is the level of detail, level of depth, level of complexity, level of accuracy, the use of perspective, use of colours, etc.

2 AN EXTENDED LANGUAGE OF SKETCHING

This paper states that in order to clearly communicate a complex case, sketches should have an advanced level: designer should have a considerate level of sketching ability. Similarly, Jean Trumbo (1999) suggests that 'effective scientific visualization can only be shared among expert and lay audiences if there is a sufficient level of visual literacy'.

Sketches as the one in Figure 5 seem to answer to this need much more: such 'rich' canvasses envision relationships and context factors, using three dimensions (3D) for simplifying complex information.

Figure 5: Dimensions and arrows in a 3D space of various levels and interconnected elements allow for a rich visualization of a complex situation/ relation between elements (Martijn Haans for DTZC)

Figure 6 are made by visual thinking agency Flatland. Haans' (Figure 5and Flatland's 'visuals' show how a methodological approach effectively helps simplifying a complex situation, system.

The following paragraphs will support the statement and suggestion that 'rich' visual design thinking sketches have (1) structural commonalities with product design sketches, and (2) with principles of cartoon sketches.

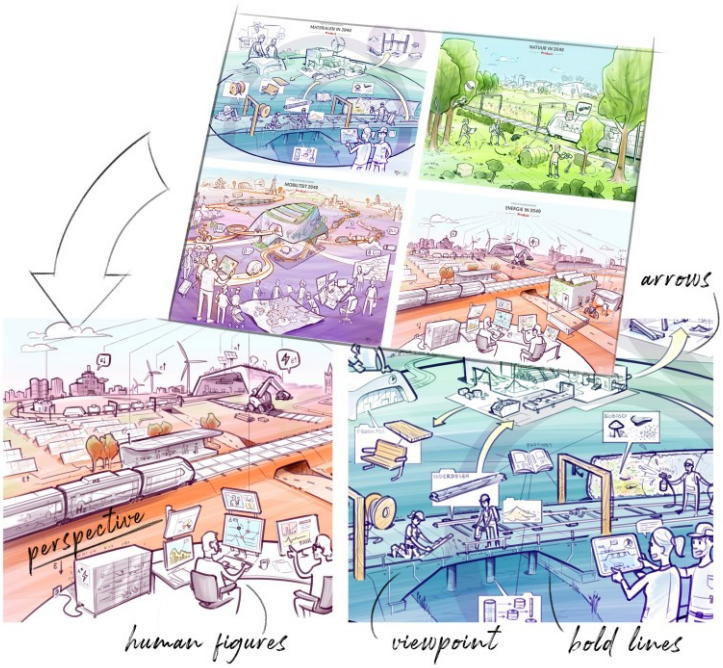


Figure 6: Visuals for a major railway infrastructure organization in The Netherlands showing their vision on sustainability. (Flatland | Visual Thinking Agency, https://flatland.agency/en/)

2.1 Similarities between 'rich' visual design thinking and product design sketches

Interestingly, Figure 5 and Figure 6 sketches show many characteristics of typical product design sketches, as e.g. shown in Figure 3. Specific methodologic features, which are similar for these and for product design sketches, help to emphasize e.g. relationships, links, depth, the human role. At the same time, both kinds of sketches consider line thickness, arrows, tonal values, people, and a well-considered viewpoint.

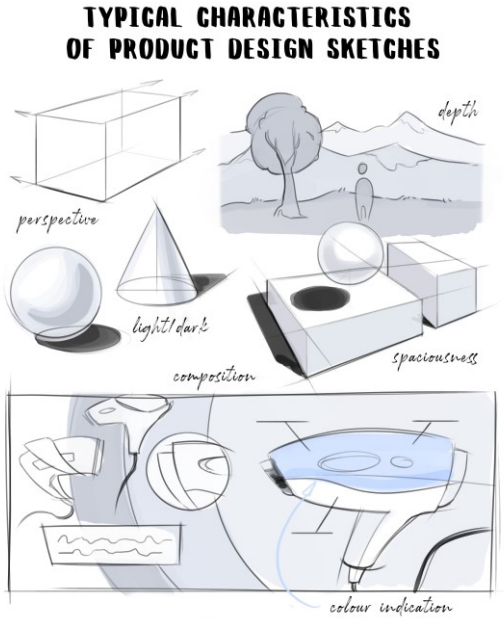


Figure 7: 'Traditional' product design sketches are characterized by aspects that are also relevant to visual thinking (Sylvia Kormelink)

2.2 Similarities with graphic novels

Also very interestingly, 'rich' visual design thinking canvasses as shown in Figure 5 and Figure 6 have many similarities with graphic novels. These similarities can be seen in Figure 7 and Figure 8.

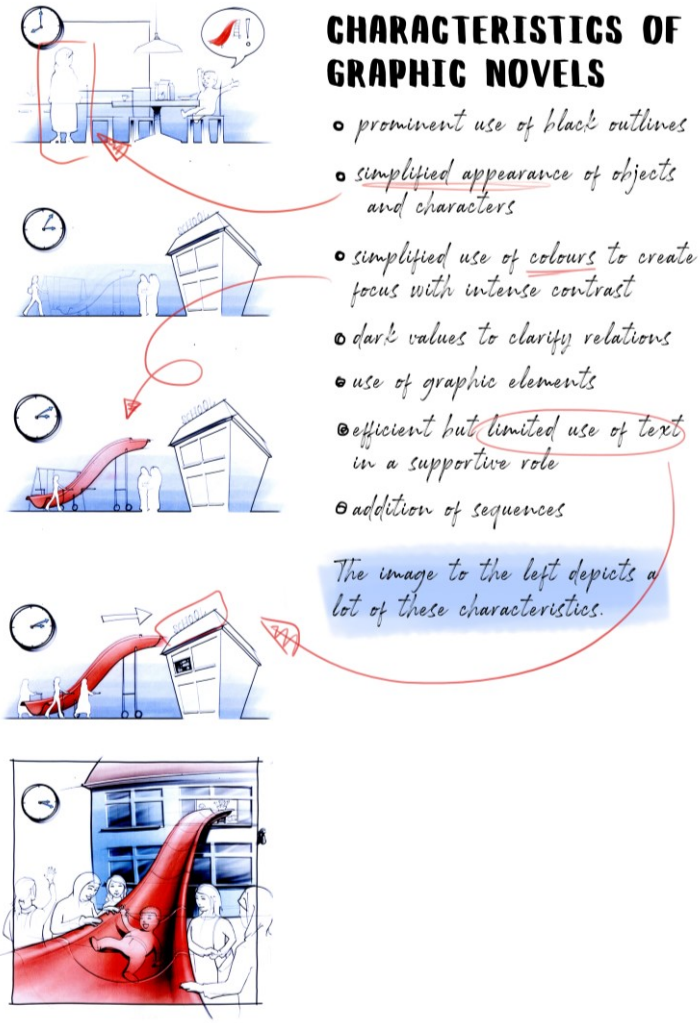


Figure 8: Storyboards in design drawing make use of sequential frames and characters. Color and contrast applied in this drawing support the focus of the narrative. These characteristics are quite familiar to the graphic novel genre.

The fact that these visual design thinking sketches adhere to the style of cartoons could be argued to have a very good reason: cartoons master the art of simplification to capture the essence of what is being shown. The style allows the artist to choose deliberately which aspects to show, and which to omit (see Figure 9, Figure 10 and Figure 11). The simplification supports the narrative (see Figure 9) and allows the artist to work more efficiently as it takes less time to produce. Two main modes of graphic simplification have been recognized in the past: extraction of the complete form, persevering the structure of an object, and extraction of partial features, preserving recognizable elements of an object (Hsu and Wang 2018).

Figure 9: Different steps in graphic simplification from a realistic object to the abstraction thereof (Hsu and Wang 2018).

Figure 10: Capturing the essence by simplifying (Hulsing 2015)

2.3 Simplification requires mastering

The danger of this simplified style is the expectancy of the layperson that these drawings are relatively easy to make, especially in comparison to highly realistic artistic renderings of products. The fact of the matter is, however, that the art of simplification is rather hard. It can only be done with consistent success (and control) if drawing realistically is well understood (see Figure 7, Figure 8, Figure 10, Figure 11). To simplify the visual statement of an object, environment or person, is not easier; it is in fact harder. This is why fundamental drawing principles are essential to learn when aspiring to work in the capacity of design sketcher. These principles have specifically been developed to make something look 'realistic', dealing with such issues as perspectival distortion, atmospheric effects and lighting conditions.

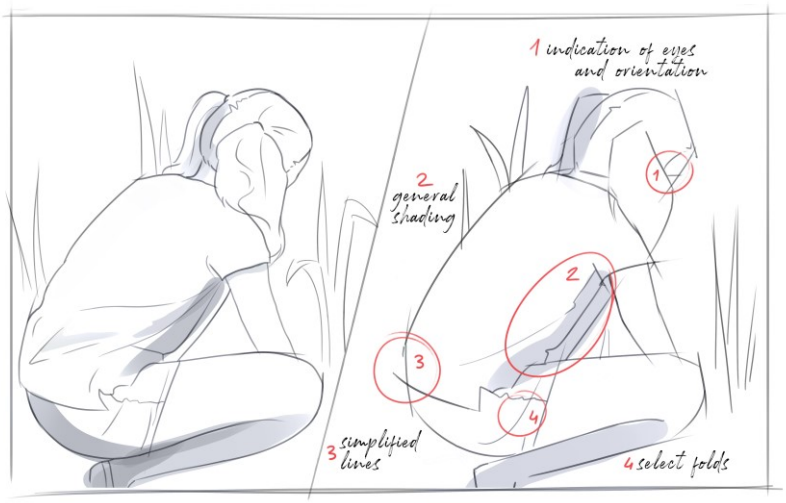


Figure 11: Knowing where and when to omit details makes a large difference in simplifying characters for example. It is more efficient and helps shift focus and hierarchy in a drawing.

2.4 Knowledge of composition

Composition in visuals is dependent on multiple choices made by the designer in hierarchy and viewpoint. With the amount of (abstract) information we see being communicated in drawings emerging from the visual thinking process, a proper composition is highly important. It can group information together or separate subjects that do not relate to one another as to improve readability of the visual.

When it comes to viewpoints, most people are familiar with the bird's eye view, showing objects and situations from above, making it appear smaller and giving an overview. Similarly, the frog perspective shows these images from below, thus appearing a lot bigger and therefore more dominant. Illustrating the same object from different viewpoints can drastically change the viewer's perception of the image.
Additional to the aforementioned, spatial hierarchy, or spatial composition, is a subject to not forget mentioning. When creating visuals, designers can differentiate between foreground and background by using colour and light to highlight the focus. Figure 12 shows how graphic novel artist Hulsing (2015) uses these 'tools' to guide the viewers eye to the centre, to the focal area, of the sketch.

Figure 12: Different color hues and direct sunlight draw the attention of the viewer to the intended focus of the illustration (Hulsing 2015).

2.5 The factor 'time'

Whereas traditional design sketching can be described as being relatively static – capturing a moment in time -, the new wave of visual communication more often includes the passage of time. Visual thinking helps businesses clarify current situations or strategize for the future, therefore the communication tends to depict goals and steps to be taken (Figure 13).

In much the same way, connecting frames in graphic novels, for example, can be done by adding arrows or interlocking the frames (Figure 13).

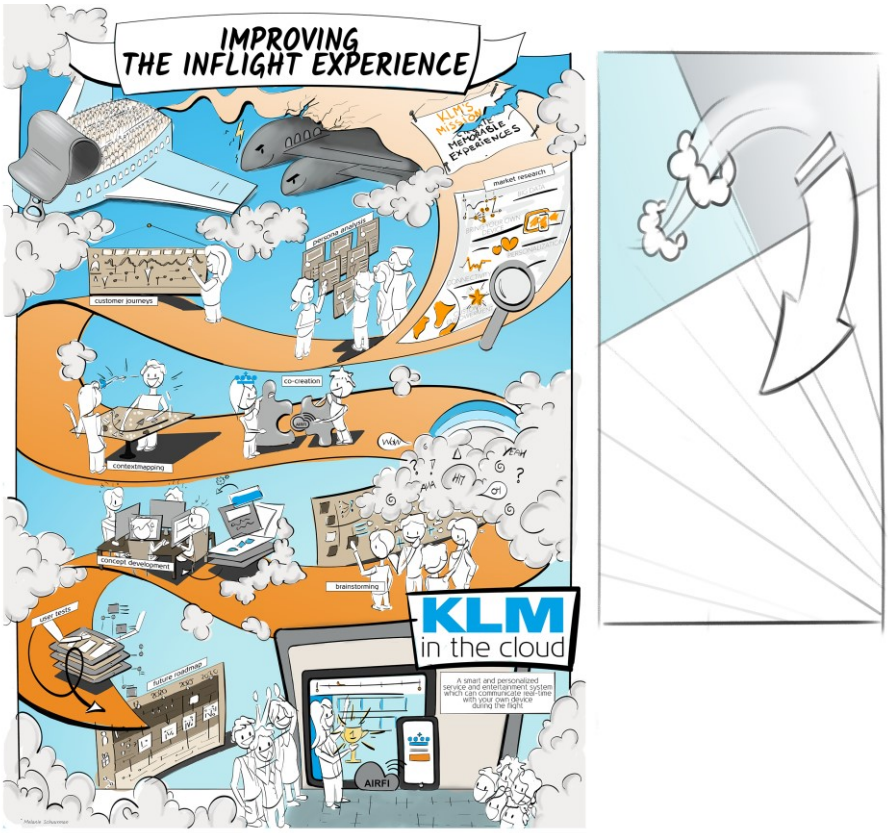


Figure 13: Example of visual communication utilizing a clear narrative and chronological order of events on the left (Melanie Schuurman) and graphic elements depicting sequences in comic books on the right.

2.6 Viewpoints in sketching

Using perspective is one of the most essential basics in the current teachings of design sketching. This is not without a reason. Having a good understanding of perspective – or viewpoints – allows design sketchers to best communicate ideas, arguments or design decisions. To put things in context, one drawing with a well-chosen viewpoint could give as much or more information than two different viewpoints together. This of course would save time (and space) in communication. Figure 14 shows how using perspective helps to provide a spatial context, and helps to tell more through the use of three dimensions, about objects and items.

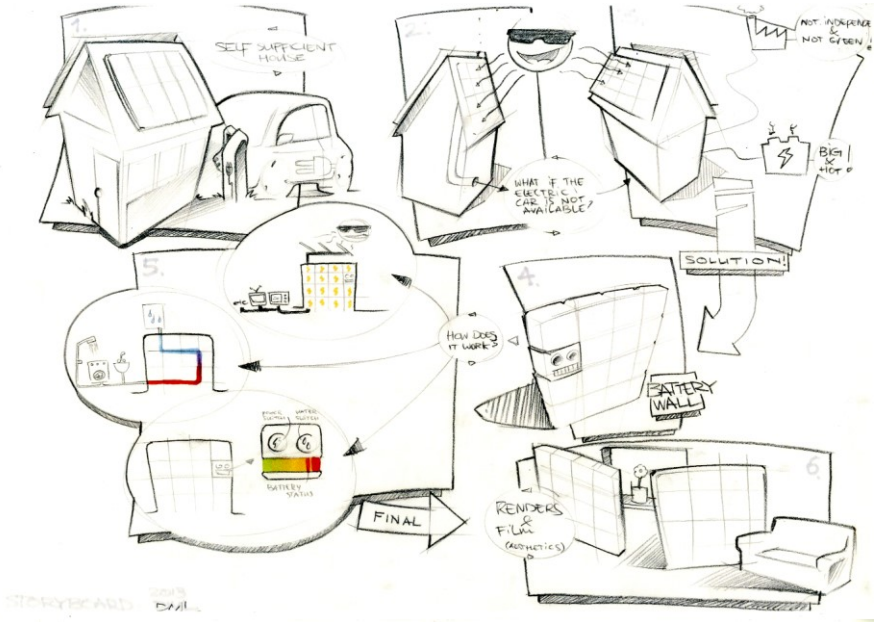


Figure 14: A variety of perspectives has been chosen to clarify the interaction and product (D. Lips).

3 CONCLUSION

Operating in the field of design sketching, drawing non-tangible design problems requires a similar understanding and mastery of drawing fundamentals as traditional sketching of tangible objects.
A lot of literature on visual design thinking regards the way of *thinking*, yet it overlooks or underappreciates the way of *drawing*. It focuses on *what* to draw, why to draw, yet not on *how* to draw. Literature on *how* to draw is hardly concerned with *what* and why to draw, and seems to disregard the expansion of the design field altogether.

Visual thinking agencies/employees that possess a thorough understanding of traditional drawing fundamentals and deploy this understanding in their endeavours, prove to be more capable in facilitating the full range of non-tangible design problems that present themselves in todays expanded design field.

Together, the combination of (1) typical design sketches (Figure 3) and (2) 'rich' visual design thinking images (Figure 5 and Figure 6
Figure 6) seems to form an accurate all-encompassing language for design sketching. These sketches integrate (a) the storytelling techniques utilized in comics (composition, tension, viewpoints, zoom-in/out), and (b) the spatial accurateness and information richness strived for in design sketches.

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