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TEACHING 'HOW TO SKETCH VISUAL STORIES' TO A PROFESSIONAL AUDIENCE: A TAXONOMY OF VISUALISATION STRATEGIES

JanWillem HOFTIJZER, Heidi CARELSBERG and Mark SYPESTEYN
Delft University of Technology, The Netherlands

ABSTRACT
Scholars in design agree that sketching is of great value to the process of design and development. Whereas its origin lies in the sketching and presenting of tangible (industrially designed) products, the discipline has, since the 2000s, extended in various ways, along various dimensions. Various authors have addressed and discussed the most prominent change within the discipline since: the addition of so-called 'storytelling visuals': sketches of processes, overviews, systems and e.g. journeys [1, 2], also named 'visual thinking'. In fact, sketching as a means of communication has grown across discipline borders, and, as a consequence, the activity of sketching for communication enjoys a growing group of actors and audience these days. One particular course, a so-called 'Master Class', which is an intensive two-day taking course, taught to an external audience, focused on 'how to sketch visual stories', was subject to an experiment. The course was designed according to specific requirements (audience, pedagogy) [2]. Secondly, in order to assess the logic of the structure and the quality of the short course's structure and contents, participants were asked to fill out a questionnaire. Together, this experimental set-up, the questionnaire results, and the sketched output of the Master Class have led to new insights, to new knowledge that will help improve the pedagogic approach of many of the current courses taught and to the follow up Master Class in particular.

Keywords: Visualisation, sketching, visual-thinking, process-sketching, design, drawing

1 INTRODUCTION: ADDING STRUCTURE TO THE EXPANDING DISCIPLINE OF DESIGN SKETCHING
Whereas the origin of design sketching lies in the visualisation of tangible (industrially designed) products, the discipline has, since the 2000s [1], expanded along various dimensions. The expansion is a consequence of (1) new trends in the field of industrial and product design: i.e. the addition of early (strategic) stages to the design consultancy portfolio [3], and (2) the general trend present in various fields: the increasing use of sketches to display processes, overviews, systems and e.g. journeys, to enhance communication [1, 2]. As referred to by Hoftijzer and Sypesteyn [2], the expansion is aligned to a larger trend that concerns the visual medium in general: imagery is becoming central to communication and meaning-making [4]. These developments have – to summarize - led to the addition of 'visual storytelling' to the discipline of design sketching. In this paper, visual storytelling considers the use of sketching tactics, methods and skills, to draw story elements and linking elements resulting in one single visual representation (a 'praatplaat', in Dutch). See Figure 1. Mostly, such a visual representation comprises advanced perspective grids, a variety of story elements (among which, people), together 'telling' a story that either has a sequential nature or not. Some examples of companies offering the expertise of 'visual story telling' are Ink, Illustrategie, JAM, Flatland, etc.

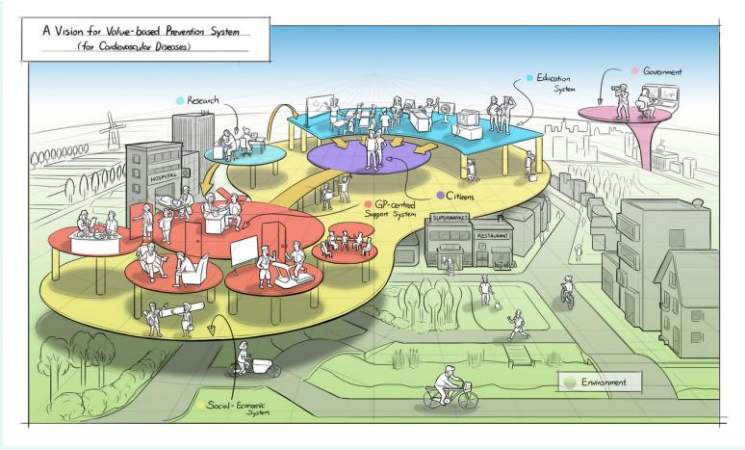


Figure 1. Example of a visual story telling (a 'praatplaat', in Dutch)

Along with the extension of the design sketching field, the activity of sketching enjoys a growing group of actors and audiences these days. Sketching increasingly receives the attention from disciplines as social sciences, engineering sciences, from strategic and tech consultancies.

2 A PEDAGOGIC STRUCTURE AND TAXONOMY OF VISUAL STORYTELLING

2.1 The need for structure: pedagogy and taxonomy

Both developments mentioned in the introduction, have resulted in changes concerning design education and design sketching education in particular. Given this expansion of the discipline of design sketching, as discussed in the introduction, there is a need for a new pedagogic structure. Based on the recent establishment and development of new sketching course content, aligned to these new areas, and the teaching of these courses, the authors developed a novel and generic pedagogic system to support this: (1) a pedagogic approach, and (2) a taxonomy of visual story telling strategies.

2.2 A pedagogic approach: starting with basic elements

Firstly, the structure of teaching (the pedagogic step-by-step agenda) of the Masterclass was aligned to the insights and knowledge as presented by Hoftijzer and Sypesteyn [2]. That pedagogic approach links the sketching of abstract content to the basics of design sketching (the latter being described by e.g. Eissen [5], Robertson [6] and Hoftijzer [7]). Secondly, the structure comprised a sequence of steps that would steadily help the participants to run the process stages from drawing story elements to sketching their own story. Elements that were specifically addressed were e.g. 'rich' sketches (clear, informative, and accurate [2]), relationships, tactics, simplicity, sketching pace.

The *first day's programme* concerned: Speed sketching / Visual note taking (effective and rich) / introduction lecture / 'Pictionary' / sketching tactics / 'how to make toast' [8]. The *second day programme*: 'treasure hunt' / lecture concerning sketching tangent things v abstract things / sketching system overview / introduction of taxonomy / implementing in participants' cases. These steps aimed to train the participants starting from fundamental (pedagogic) elements to sketching their own professional story/journey. The sequence of exercises and little breaks was 'larded' with instruction presentations, but most of the time people were sketching.

Manageable success creates a sense of competence

The creative mind boosts within a relaxed and confident setting. When the aim is too high or the demands seem too difficult, stress and fear of failure reduce the sense of competence, resulting in diminished confidence in a successful result [9]. This is also the case when the quantity of variables within an assignment are perceived as too many. Practically, this means that people's creative brain is to be unlocked by small, isolated exercises that connect elements of theory to practice. This serves as a reasoning for the implementation of small sequential steps within the structure of the Masterclass, from small elements to the final story.

2.3 A taxonomy of visual storytelling strategies: templates

The authors provided a fixed set of templates for the participants to use when designing their visual story set up (

Figure 2). The templates provided explicit starting points for the participants, to structure and compose their story. The templates can be seen as strategies for visualising. At the same time, the templates formed examples of what visual storytelling could look like. To offer a variety of possible ways to structure a visual story, the authors used different analogies for the design of the different templates. Based on a thorough exploration of existing story telling sketches, these analogies represent five different and distinct ways in which story elements can be related to each other, concerning e.g., hierarchy, dependency and sequency. However, mixing, combining or extending one or more of these five templates, in order to make them better fit the story that needs to be sketched, is definitely supported by the authors. The proposed taxonomy of storytelling sketches concerns:

a. The Iceberg. This category considers 'visualizing the 'seen' vs. the unseen', or 'what lies above/ beneath the surface?' This template structure suits stories that aim to convey the hidden reasons causing a specific outcome or phenomenon.
b. The Roadmap. This category considers the visualising of a sequential process. This template structure would suit stories or processes that aim to convey the stages, the changes and the context (factors) that define a specific process (of distribution, production or any other path that is run).
c. The Stepping-stones. This category supports the visualizing of certain milestones within a (mostly) sequential storyline. This story focusses on these 'gates'.
d. The Solar system. This category considers the visualisation of a core subject and all its relations positioned around it. This format would suit a visual mind map: the centre problem, with all sub-problems or solution directions structured around that problem.
e. The System overview. This category considers all the elements of a system. This could concern any combination of connected or related elements. Typically, this format concerns a composition of interdependent stakeholders or core elements, clearly linked to each other through the use of lines and arrows.

Pictures of the five 'strategy templates':

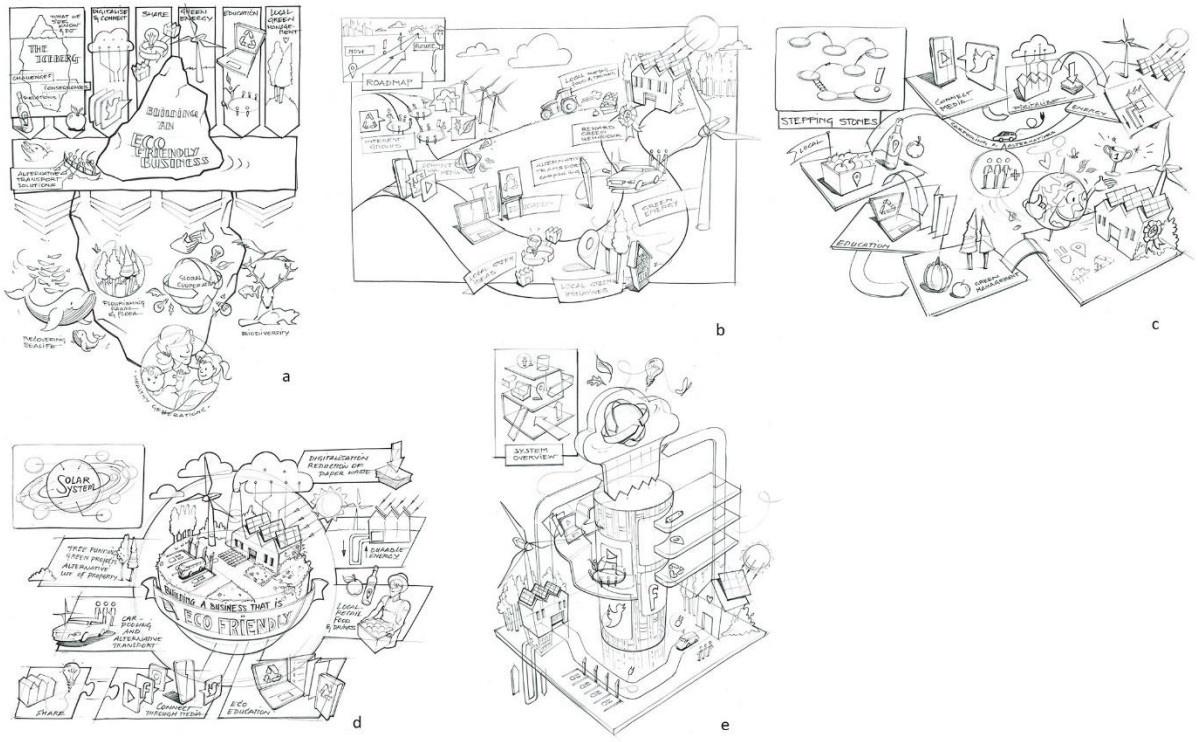


Figure 2. The five templates for story telling sketches

To serve as an example of what the end result could look like, all provided templates considered approximately the same subject.

3 EXPERIMENTS: A MASTERCLASS FOR AN AUDIENCE FROM INDUSTRY

3.1 Method: a questionnaire

In order to test the authors' hypotheses being (1) the pedagogic approach (see §2.2) and (2) the templates representing the taxonomy of strategies (see §2.3), a test was conducted by offering a Masterclass called 'visualization' to professionals from various industries. Part of these professionals were designers, and part of the group was not, which answered to the desire to test a group with various levels of sketching experience (as the goal was to serve a non-homogeneous audience).
Authors performed a test both (1) concerning the pedagogic approach and (2) the implementation of 5 different visual storytelling templates/ examples (the taxonomy). With a questionnaire and by observing the behaviour and results of participants, the authors were able to deduce the value and accuracy of what was provided in the Masterclass. The experiment (and questionnaire) concerned the three areas of alignment, structure and learning, see §3.3.

3.2 Masterclass set up

The Masterclass was offered within the context of the range of Masterclasses called IDE-MC, organized by a Dutch industrial design institute. The Masterclass concerned two days of sketching exercises and implementation, facilitated by three experts (the authors). Most of the exercises were executed on paper using fine liners, pens, markers. Some were done digitally, using an iPad or Wacom.
The participants were 13 professionals of which 5/13 designers in practice. Most of the participants had reasonable experience in sketching. They represented companies as Maersk, Zilveren Kruis, Windesheim, Coors, Koen, Boon Edam, Pan Oston and Laudea. The participants were asked to bring a specific case that referred to a potential professional situation for them, in which they were to apply the gained insights and knowledge.

Figure 3. Photos during the Masterclass

3.3 Hypotheses

Alignment

1. The Masterclass matches the prior knowledge of participants.
2. The knowledge and skills are directly relevant to the participants' professional daily practice.
3. The Masterclass enables participants to explore the subject further, on their own.

Structure

4. The lecturers structured the Masterclass well.
5. The Masterclass timetable and duration were appropriate.
6. The provided Masterclass materials supported the content.

Learning

7. The Masterclass contributed to the participants' learning experience.
8. The Masterclass improved the participants' expertise in this subject.
9. The Masterclass will help participants to apply specific knowledge, concepts and theories.

Additional to these survey hypotheses, the authors asked about the overall relevance, the overall organisation, and the overall score participates gave to the Masterclass. These are represented by questions 10, 11 respectively 12.

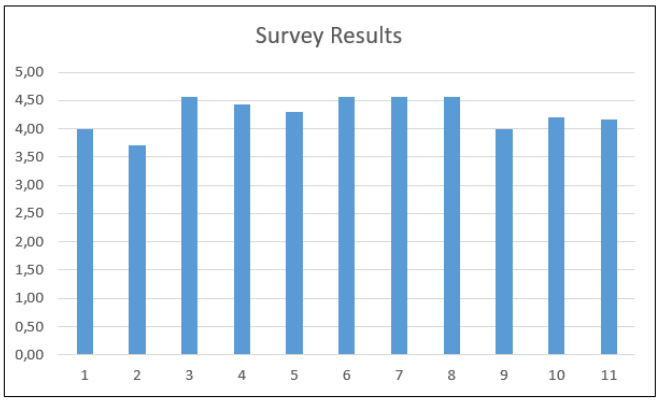
10. How would you rate the relevance of the Masterclass?
11. How would you rate the quality of the organisation of the Masterclass?
12. What would be your overall score for the Masterclass (scale 1-10)?

4 RESULTS

4.1 Numerical answers to the questionnaire

Table 1. Numerical results of the questionnaire

Question		n	scale	average (max 5)	deviation
1		7	1-5	4,00	0,82
2		7	1-5	3,71	0,49
3		7	1-5	4,57	0,53
4		7	1-5	4,43	0,53
5		7	1-5	4,29	0,76
6		7	1-5	4,57	0,53
7		7	1-5	4,57	0,53
8		7	1-5	4,57	0,53
9		7	1-5	4,00	0,58
10	Relevance	7	1-5	4,21	0,53
11	Organisation	7	1-5	4,17	0,76
12	Overall (scale 1-10)	7	1-10	8,71	0,76



4.2 Answers to the open questions

Most valuable

- What aspects of the Master Class were most valuable to your learning? Why?

Answers: the *basic sketching techniques* / visualisation concept development / visualisation tactics / hands-on drawing / interaction & feedback / That visualisation concerns both the result and the process / Fast sketching and scenario sketching / Visualisation of stories / strategies / being pushed to sketch, that is not common for me, was great / the teachers are excellent / dare to draw again + story telling.

Options for improvement:

- How can the IDE Master Class programme further enhance your professional level and personal development?

Answers: Build on the above / emphasize form giving and design sketching / add half a day digital drawing exercise / have no clear idea on this yet / the basics were just repeating for me. This part could have been shorter for me. Or perhaps more options in exercises, depending on your skills and prior knowledge / *some basics (like drawing thin lines, straight lines, circles) could have been a preliminary DIY video lesson /* the non-manual (computer) drawing techniques could be best added as an extra lesson online / A bit too much games / no time to include exercise for digital drawing / Maybe to get a bit more freedom of choice about the subjects/topics the description of the content and what actually happens in the room can be unexpected for people who is not close to the Design world / I attended with no idea that we would be drawing so much. I loved it but I wonder if that is clear when you see the announcement.

On top of the numerical answers from the questionnaire, participants were very helpful in providing feedback, both positive and referring to options for improvement. The authors will search for ways how to implement many of these suggestions.

4.3 Observations

In implementing the story telling templates on the second day, some participants combined one or two categories in order to suit their own project. For the authors, that was very interesting to observe and guide. It was clear that participants felt comfortable to improvise. Overall, all participants were clearly thinking while sketching, and thinking through sketching: how to visualise, what is important, how to convey my message best? The templates provided structure, guided the thinking process. The templates served in various ways for participants on different levels of visual skill and storytelling, either as a framework for the placement of their story elements and to define internal and external relations, or as a reference to create a template for themselves. The templates increased the practicability for the coaches and the effectiveness in demonstrating techniques within the Masterclass structure. The templates served as a tangible take away for the participants. Being able to experience the differences explicitly by comparing the different outcomes of different templates, gave participants a deeper understanding of visual storytelling.

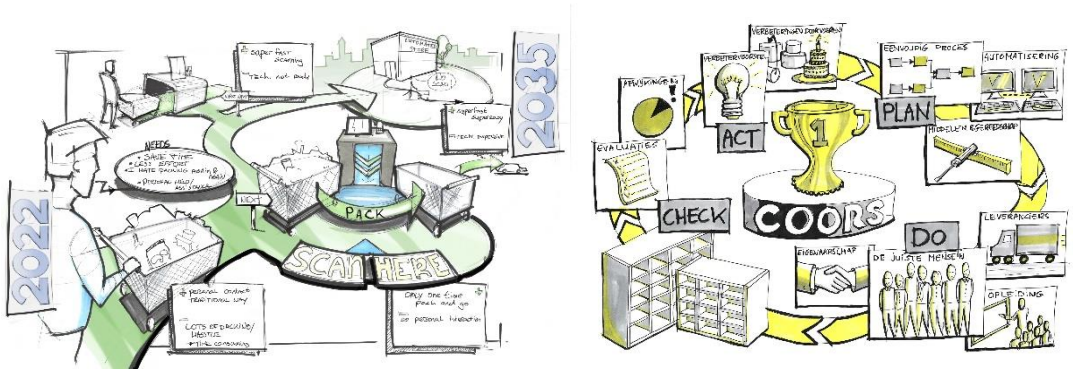


Figure 4. Examples of participants' outcome

5 DISCUSSION AND CONCLUSIONS

The Masterclass experiment led to great results, high evaluation grades, and participants provided very helpful suggestions. This tells the authors that both the pedagogic structure and the taxonomy of strategies (the templates) were accurate, and suitable for applying in education. There was some discrepancy between some of the open question answers: some suggested addressing basic knowledge more, whereas someone else suggested providing this content in a separate video. The authors will consider this; such an approach might help to cater the level differences within the group: differences in prior knowledge. Generally, although most members of the audience were educated in design, the authors served a non-homogeneous and professional audience. Because of the non-homogeneity, the tested approach seems suitable and applicable to a variety of courses and programmes, as the population at the university tends to be quite non-homogenous as well. Not all participants responded, which is why this study should be considered a qualitative review, not as quantitative research.

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