



Now we get into the *designer's practice* where the *real collections* of visual materials are kept. A *contextual inquiry* was conducted on the designer's work environments and the *role of collections* of visual material in the *design activities*.

This chapter is submitted to *Codesign*. It describes how the *contextual inquiry* was conducted and how it led to the *six considerations* for a *collecting tool* for designers. The inquiry follows up on a *similar study* done ten years earlier by the co-author **Gert Pasman**.

We use *methods from social sciences*, looking at the designer's collections from an *ethnographic perspective*. In the introduction the area of research is explained once more, this time with an emphasis on *observations* and *ethnographic research*.

At the end we define the *key elements* of our phenomenon and *link back* to the previous two chapters. In combining *theory* (chapter 2) with practice we learn that we should focus on *collecting* as an *ongoing activity* and in combining *technology* (chapter 3) with practice we see opportunities in *bridging the physical-digital divide* in the designer's collections.

This work was done in the summer of 2002 and resulted in the considerations used in the *Cabinet prototype*.

ABSTRACT

This chapter reports on a contextual inquiry performed at six design agencies looking at the role of visual material in their design work. The inquiry used a cultural probe to sensitize the participants to the subject of visual material, collecting and collages. The visit to the studios consisted of a tour of the workplace and a structured field interview.

In the design studios all the designers were surrounded by different kinds of physical visual material on different carriers, storage methods and locations. These materials were collected structured on medium, time or theme and often shared with colleagues. All the designers also kept digital images on their computers, structured by project and phase. These images were used in their collages and in communication to the client. The digital and physical collections were hardly ever used in combination.

The results of this inquiry were used to set up a set of six considerations for a tool to support designers in collecting visual material. These considerations focus on the merger of the two collections in both interaction and value.

This chapter is based on: **Keller, A.I., Pasman, G, & Stappers, P.J.** (submitted) Collections designers keep: Collecting visual material for inspiration and reference. *CoDesign: International Journal of CoCreation in Design and the Arts.*

4.1. Introduction

Kolli, Pasman, & Hennessey (Kolli *et al.*, 1993; Pasman, 2003) studied the designer's practice in order to identify the requirements computer tools should fulfil to support designers successfully in the conceptual phase of the design process. Using the method of Contextual Inquiry, a synthesis of ethnographic studies, field research, and participatory design techniques, they interviewed designers at their workplace on several topics, such as the different methods, techniques and tools they used, how and where they were getting their inspiration for new design concepts, what role the computer played in their working habits and how they organized their work environments.

Kolli *et al.* summarized the results of their study into a set of seven considerations for designing computer tools to support conceptualizing. Such tools should: 1) support the rapid and rough capturing of ideas; 2) afford a personalized environment; 3) use rich information sources; 4) enable a high level of communicability; 5) support individualistic styles; 6) afford a smooth shifting of activities; and 7) support motor skills. These considerations were later further explored and worked out in the development of a series of tools for supporting sketching (Hoeben & Stappers, 2001), visual database queries (Stappers & Pasman, 1999), and 3D conceptual modelling (Gribnau, 1999).

One overall conclusion from the Kolli study was the importance of visual material and visual ways of working in the conceptualizing process. All interviewed designers reported the collecting of visual reference material in the form of photographs, glossy magazines, product catalogues, videos, slides *et cetera* to be a major activity. Especially references to existing products, in the form of images, models or commercial samples, were actively sought for. These were then subsequently processed into collages, moodboards or presentations. Other researchers have also pointed at the prominent role of existing visual material in design thinking. For example, Eckert & Stacey (2000) reported that skilled designers use their strong visual memories to recall complex visuospatial chunks of their collection of "*sources of inspiration*" to mentally redesign their design. And in most design schools, students are taught how to use visual material in the design process (e.g., making collages; Muller, 2001).

The decade after the Kolli study has seen a rapid and radical change in both tool use and the role of industrial design itself. The graphically powerful computer has taken a central place in design. The adoption and growth of the World-wide-web led to an explosion of visual information and communication. Furthermore the role of industrial design itself has evolved (Kelley & Littman, 2001). Where product design previously was regarded as having to do with form and colour, it has now become an integral part of the

innovation process, including user studies and idea and concept generation.

These factors will also have affected the ways designers collect, organize and process visual material.

4.2 Contextual inquiry

To find out these changes a follow-up of the 1993 study was conducted with the following objectives. Firstly, it takes a fresh look at current design practice, to gauge whether the findings of the 1993 study are still valid. Secondly, it narrows the focus on the use of visual materials, towards gaining knowledge on how designers collect, organize and process visual materials in their design process and what new media tools can do to support these interactions. Topics covered in this study therefore include the designer workplace, the design process, the use of collages, the visual material used for collages, the way this material is collected and stored, and the role it plays in the generation of new ideas. Finally, it was expected that through a better understanding of the role of visual materials in the workplace the findings of this study can be translated into a set of design criteria for new media tools, supporting the interaction with collections of visual material.

4.2.1 Participants

The participants were recruited from five independent design agencies, which were selected in co-operation with the Dutch designers association BNO to reflect the differences in the field. The agencies varied in size (from a one-man consultancy to agencies with over 60 employees) as well as in product markets (consumer, medical, professional or packaging). One agency specifically focused on new media design, but was part of an association of other creative agencies. Two of the agencies had been involved in the 1993 study, but none of the present participants had been involved in that study. Partners of the five design agencies then selected one designer from their staff who had been involved in one or more design projects in which collage making or making visual presentation using existing material had played an important role. All of the selected five participants had over two years of practicing experience but varied in educational background (university or academy), age and sex (figures 1 to 6).

4.2.2 Method

In line with the 1993 study, contextual inquiry was taken as the basic method for the present study. It consists of a joint *inspection* of the workplace, followed by a structured field interview (Beyer & Holtzblatt, 1997). This method works well to bring out aspects that the participants can talk about easily, addressing both the current practice and reasons behind it.



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MV



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LS



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JB



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PR



3

RH



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MS

- 1 **Marcel Vroom (MV)**, MVAVD (1 employee). *Graduated from TU Delft, over 20 years of design experience in product design, research and consultancy*
- 2 **Jan Willem Bouwknecht (JB)**, NPK (60 employees). *Graduated from TU Delft, 4 years of design experience in product design, engineering and conceptualization*
- 3 **Rogier Hendriks (RH)**, Onesize (2 employees). *Graduated from artEZ, 2 years of design experience in motion and graphic design*
- 4 **Lisa Smith (LS)**, WAAC's (8 employees). *Graduated from ACCD, 7 years of design experience in product design, packaging and consumer research*
- 5 **Peter Roeland (PR)**, Flex (24 employees). *Graduated from TU Delft, 3 years of design experience in product design and packaging*
- 6 **Marieke Sonneveld (MS)**, Nomos (1 employee). *Participant for pilot*



- 7** The cultural probe as it was distributed to the participants
- 8** Overview of a cultural probe filled in by one of the participants

In addition to this method, the workplace was preceded with new techniques for knowledge elicitation developed in the participatory design community, namely cultural probes (Mattelmäki & Battarbee, 2002) and generative tools (Sanders, 2002a). These techniques deepen the levels of information accessed by sensitizing the participants by using diaries, expressive techniques and playful assignments. As Sanders argues, they enable participants to talk about their dreams and wishes for the future, not just their observations and irritations from the present and the past. This last aspect, getting at participants' dreams, is especially relevant because we want our findings to drive future tool development.

Moreover, we expected the sensitizing techniques were needed, because in a previous study described in chapter 2 it was found that collecting visual material itself is a continuous side activity to designers. Collecting was not considered to be a formal, structured and documented way of working; rather it appeared to be an informal part of design culture. Such informal activities involve levels of tacit knowledge that are not easily brought out in a conventional interview technique (Polanyi, 1974; Sanders, 2002a), hence the need for these new sensitizing techniques.

4.2.3 Procedure

SENSITIZING

One week before the interview, each participant received a cultural probe: a small package containing a booklet with evocative assignments, stimulating visual material for collage making, a set of colored pens, scissors and a Polaroid instant camera (figures 7 and 8). The assignments, 14 in total, were

open-ended, covering different themes in the design process, starting out with specific questions on their workplace and the tools they use, and then gradually moving towards collections of visual material and sources of inspiration. A sample assignment was “*take a picture of your workplace, paste it on this page and give some comments*”. Also, they were asked to draw out a “*plan of your work environment*”, and “*mark the place where you keep your visual material on the plan you drew using this red dot*”. In the final assignment participants were asked to make a collage representing their work process when designing.¹ The materials, pens, and form of the assignments (e.g., half-finished diagrams, photographs chosen to elicit associations), were playful and intentionally rough and sketchy, in order to provoke the participants to take the initiative, bring in their own perspective and express freely (the reasons for this are argued in Sanders, 2002b). The cultural probe therefore served three purposes: 1) it gave us rich user data in the context of the workplace over time, 2) it forced the participants to think about their use of tools and visual material and, related to that, 3) it sensitized the participants on the topic of visual material in relationship to their design process (Sleeswijk Visser et al., 2005). Thus awareness was created which was then subsequently ‘harvested’ during the interview.

INTERVIEW

The sessions started with a 20-minute tour of the workplace, followed by the actual interview, which took place at the participants’ workplace and lasted about 90 minutes. The participants were asked to briefly describe a recent design case, and were encouraged to refer to this case whenever appropriate. Topics covered during the interview partly resembled those from the 1993 study, such as the designer’s workplace, their design process, the tools they used and their sources of inspiration.² However, this time the questions were directed more towards the role of visual material in these areas. Next to these, new and more specific topics were addressed, such as the participant’s use of visual material in general, the making of their collages, and their collections of visual material, both physical and digital.

The interview also contained a small assignment. At some point, after a participant had referred to a specific image from his digital or physical collection, the researcher asked him to show this image. This required an impromptu search for that image in the collection. The search itself was observed, eliciting questions from the researcher and unsolicited comments from the participant. This assignment was conducted for both a physical and a digital image. If the participant had not spontaneously mentioned an image,

¹On <http://www.forinspirationonly.net/appendix/> a PDF of the booklet can be downloaded

²On <http://www.forinspirationonly.net/appendix/> a PDF of the questionnaires for the interview can be downloaded

the research would ask if the participant could think of one, which was then used instead.

Audio was recorded during the interview and photographs were taken of the workplace and the material shown during the tour and the interview. Following Collier & Collier's (1986) recommendation, pointing the camera was also used as a means to elicit comments from the participants.

4.3 Analysis

After gathering the data, meaning had to be assigned to it through interpretation. The data used for analysis consisted of the transcripts of the interviews, supplemented with photographs and notes made by the interviewer. Because the probes were only used to prime and sensitize the participants for the actual interviews, their data was not included in the analysis.

In a number of interpretation sessions, the interviewer walked through the interviews together with the researcher, who had also conducted the 1993 study. Goal of these sessions was to build a shared understanding. For each of the identified areas of interest, all observations, statements, notes and photographs were jointly interpreted and then subsequently processed into more general findings. These findings were then discussed between the two researchers as well as with other researchers and designers, resulting finally in a set of six design considerations, which can serve as guidelines for developing a tool to support the use of visual material in the design process.

4.4 Results

All participants were very open in explaining and showing their workplace, the tools they used and the visual material they collected for their design process.

4.4.1 Using the cultural probe

All participant had studied the probe and done most of the assignments, though only two had completed all of them. Adding the new sensitizing tools of workbooks and probes appeared to have been a good addition to the proven method of contextual inquiry. Participants talked not only about their past experience, the current situation and its problems – by also probing their dreams and aspirations, they could frame their observations into desires for the future more readily.



9 Observations of collections in different ranges in the workplace

4.4.2 Observations from the guided tour

In the two large agencies (RH, JB) due to security reasons the guided tour was limited to the areas that the participants considered their daily practice. In the case of the other participants, even at the smaller home offices (MV, MS), the tour covered several stories, rooms and functional areas.

VISUALS IN THE WORKPLACE

All workplaces contained a diversity of ways of storing visual materials of different modalities: cupboards filled with visual materials; stacks on floors; posters, notes and artefacts on the walls; reading tables filled with magazines (both stacked and layed out). Each of the participants at one point in the

tour apologized for messiness, sedimentation or chaos. When making these remarks, they either pointed at stuff that colleagues had left there, at the results of a group meeting, or at artifacts on the wall (“*we need to update these walls*”, PR). LS explained that she did not use the walls because in her previous workplace she had had the experience of these walls becoming too static and turning into “*visual wallpaper, which is only a disturbing noise*”.

All participants talked at length about the artifacts in their own cupboards and on their desks during the tour of the workplace. They all worked on multiple, large-size desks, on which a computer and sketching tools such as pen and paper were layed out, with the exception of the new media designer (RH), who had a single desk which was dominated by a computer with almost no free surface. All participants also displayed a sense of pride about the work that they were currently working on. PR, who worked in a so-called “*flexible workplace*”, talked fondly about his personal closet as being the real showcase of what he was working on, communicating both to himself and to his colleagues.

Figure 9 gives an overview of how each participant stored their visual materials. The table is organized into four places of storage and presentation: 1) walls and cupboards, 2) floor, 3) the tabletop, and 4) the computer. All participants used all these places, yet in different ways. Some walls and cupboards are full, some are empty and one participant used a magnet wall (JB). Similarly, the use of tables and floor space varies, as does the collection of computer software and the way the computer is ‘embedded’ on the table.

4.4.3 Interview

All the designers freely talked about the tools and techniques they used in their design process. The results will cover tool usage, role of collages, their collections of visual material and their sources of inspiration.

TOOL USAGE

Although all participants had spoken with pride about their workplace during the guided tour, they initially talked down the importance of tools, stating that they could work “*with anything available*”. Yet, when asked to describe their pens and how they use them, they more than once showed special bonds with their tools and the techniques they used to optimize their tool usage (e.g., PR mentioned wearing down his fineliner in order to get a drawing style with more personality; MV showed a pencil and pen that he used for all his drawings and annotations over the past 10 years). Although such physical tools are used with care and devotion, they seem to have receded however into the background of the designer’s awareness.



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10 Unused tools: a scanner with books and magazines on top of it

11 Unused tools: a digitizer tablet in vertical position between computer and monitor

The computer, on the other hand, was very prominent in their minds. All participants stressed its importance as a tool for working out and visualizing their ideas. Presentations to clients were always guided by a computer presentation, often in PowerPoint. At five of the agencies these presentations were accompanied with printouts, models and posters. In these cases the PowerPoint presentations would serve as a guide to structure these different elements.

Besides their own desktop computer, the participants also used other computers, such as laptops or shared computers, which were set up for specific tasks like scanning or engineering. In two cases this shared computer was also the main computer of one of their colleagues, meaning that they had to disturb him to make a scan or print. Neither the scanners nor the pen tablets (input devices) were intensively used. In two instances we even found the scanner rendered useless by a pile of books and magazines covering it (figure 10), while the two pen tablets we encountered were either shoved under the keyboard or stored vertically (figure 11).

COLLAGE

When asked “*when and why do you make collages?*” all designers stated that they only made collages for clients wanting them or projects needing them, such as “*for presentation to the client*”, or “*as ‘visual contract’ with the client on the direction of the project*” (LS). Only RH indicated he used collages for his own overview and for finding direction. This surprised us, as we had expected collages to be an important instrument in the image creation process as it is taught in design schools (Muller, 2001). Although all participants used collages to convey a sense of atmosphere or to set the mood for a product, they remarked little on the collages’ formal aspects, such as composition or structure.



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12 Digital imagery used for collages in a list of named files

13 Digital collage in the making with unused imagery and colour swatches outside the page

Collages could be anything, from singular images to complex arrangements of many images and words, while many of the collages that participants showed also contained keywords, as a title or as smaller elements.

LS demonstrated a typical way in which collages would be made with the computer. She would first start out by discussing and selecting several directions she wanted to explore. For each direction she then created a separate folder, which she labeled with a short description of that direction. After this, she would visit a stock photo website and search it using keywords related to the several directions. Selected images would be saved in the relevant folders without renaming them. After the search she would add materials from other web sources, or by scanning in images from magazines. Subsequently a selection was made of the images within each folder (figure 12), which were then given more descriptive names. Finally the selected images were imported and organized in a collage using Adobe Illustrator (figure 13). The images that were not used remained with their old names in the folder.

This example demonstrates that verbal rather than visual interactions guide the image formation phase.

Most of the interactions related to storing and organizing images on the computer are simply concerned with file management and have nothing to do with either image creation or collage making at all.

COLLECTIONS

During the tour, all participants had pointed at several collections of visual materials in their office (as shown in figure 9). Demarcations of collections were explained by referring to places (stacks with themes), media (slides in one cupboard, magazines on bookshelves) or ownership (personal versus shared collections).

As motivation for collecting, participants indicated several uses of the collected material: 1) as reference (catalogues, colour and material samples); 2) to archive their own work (product photography, drawing archives); 3) as elements to use in collages; and 4) to get inspired for new ideas, which was emphatically split in new ideas concerning *form* (illustration styles, angles, sketch or rendering styles) and new ideas concerning *content* (people, situations or use of colour).

Surprisingly the participants explicitly stated not to use images of existing other products. The reasons for this were that it was considered to be “*not very creatively stimulating*” (LS), “*unethical to steal*” (PR) or that “*most of these other products are already in my head*” (MV).

COLLECTIONS / PHYSICAL COLLECTION

As mentioned earlier, the physical collections were mostly structured by themes or by media and storage type. The participants had great difficulty giving names to the themes, but could talk very fluently about the kind of images in them. For example, RH owned a collection of old typography, which was acquired through taking pictures of typography in public spaces, while MV owned different collections of articles and material on “*home automation*”.

Further findings strengthened the idea that collecting as a background activity was more important than the actual collection as an *object of reference*. Although participants were sometimes rather vague on the reasons for collecting (“*I want to use it for something, sometime*”), and used very loosely structured means of storing (stacks, folders), they reported to take great care in growing the collection. Selecting and adding material was done with quite a lot of attention: MS in our pilot test said she cut out all the material she selected on black cardboard to “*make it more special*”. MV would add the date and some keywords on the back or on the side of all the materials, while PR had a process of first hanging things in his personal cupboard and gradually moving it into a stack in his collection. Furthermore, only a few images from the extensive physical collections would end up in the collages or become an explicit part of the design process. MV described the physical collection as “*just being a part of the working environment*”.



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- 14 Yellow notes in books and magazines to mark images for use in collages
- 15 Stock photography book with images marked with yellow notes and project codes

For organizing their physical collections, we found the designers at Flex and WAAC's using yellow sticky notes to bookmark pages in magazines (figures 14 and 15). At WAAC's LS even joked about taking out a colleague's yellow notes or labels as a way to communicate their disapproval of the colleagues choices. *"Colleagues would probably never notice this, but I enjoyed doing it anyway."*

COLLECTIONS / DIGITAL COLLECTION (ON THE COMPUTER)

A second collection of images, totally separate from the physical one, was found to reside on the participants' computers. They all had structured their digital collection in a uniform and verbal way, based on projects, clients and phases. The images all had names, some of them indicating the source of the material, such as a number from a stock photography website or a client's naming structure, or a description of what was being depicted. The digital collection was used for explicit goals such as making a collage or to create a background for a rendering (see the discussion of LS' collage making above).

All the participants talked about websites and stock photo collections to find images for their collages, but these online resources were not organized on their computers. They talked about them *"as places to go"* rather than their own collections.

COLLECTIONS / THE DIGITAL-PHYSICAL DIVIDE

The two collections of physical visual material and digital imagery did hardly overlap. The only ways designers said to connect the digital with the physical world was by either printing out a digital document or use



16 Misprints used to share projects with their colleagues

17 A printed photo used as a background to draw upon

the flatbed scanner to digitize an image from a magazine or book. Both the observational evidence (figure 10) and their own stories indicated, however, that this connection was neither fluent, nor practiced frequently. Scanning was described as an awkward but necessary task. Therefore designers would first make a selection of those images really needed in a collage, which were then all scanned in one batch.

Not many printouts from the digital collection were kept in the work environment, the few ones hanging on the walls almost seeming to need an excuse. At NPK there were some printouts hung on the side of a cupboard (figure 16). When asked about them, JB said: *“Actually these are misprints because we changed some stuff, but because these colour prints are so expensive, we just hung them up on the wall to show to our colleagues what we are doing”*. At WAAC’s a colleague of LS showed sketches, for which a print of a digital image was used as a background to draw upon (figure 17).

An interesting illustration of divide between the physical and the digital collection emerged in the last assignment of the probe, in which the participants were asked to make a collage of their design process based on material given to them and, optionally, another collage with their own material. While four out of six participant made the first collage, only one participant (LS) made the optional collage using the Polaroid camera that was given as part of the probe. The reasons to not complete this last assignment being (apart from time restraints) that they didn’t have the materials available at hand or had no inspiration to collect them. Two of the participants (MV and RH) actually said that all their visual material was *“inside the computer”* and therefore *“hard to get out”*.



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18 Source of inspiration: illustration from the collection

19 Image rhyme: drawing with similar illustration style

INSPIRATION

Participants found it difficult to talk about how they used visual materials in their design process, indicating they used them “to set the mood” or “to do something with it at a certain stage”. When asked for specific sources of inspiration, little was said. LS showed an illustration in a book (figure 18), whose style inspired another illustration in progress (figure 19).

When the question was rephrased in “ways in which you got your inspiration”, almost all participants referred to the act of physically changing environments, e.g., by taking a stroll outside (MV), going to a shopping area (LS) or visiting an exhibition (PR), all activities directed towards breaking the rhythm, looking outside or stumbling upon unexpected things.

Three of the designers also referred to their collection of visual material for getting new ideas. But this role was not emphasized. PR: “I collect the material for my own inspiration, yet I don’t look at it that often. I just know it exists. If I like something, I want to remember it, therefore I collect it.” This difference between “sources” and “ways” was striking: whereas designers attach great value to being inspired, they regard this as a specific activity, but rather as a background process, not related to specific objects answering explicit or implicit questions.

4.4.4 Get-an-image assignment

The image search assignment showed a clear difference between the physical and digital images. Searching an image from the physical collection was usually a smooth, low-load activity, which was conducted in parallel with other activities, such as talking and thinking about the criteria of the assignment. All participants walked to cupboards, bookshelves, archive boxes or stacks on desks in their studio to take out a snippet, a book or magazine,



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- 20** Design books on a shelf above the printer
21 Design magazines with an archive in the lunch area
22 Magazines on display near printer, hallway and staircase

sometimes picking up another book on the way (figures 20 to 22). This held true even for those who had prepared a set of images on their desk. Two participants changed their minds during the search, and went to look for another, better, example. Most importantly, all participants continued the conversation during their search. They exhibited a strong sense of where they were within the collection, making the interviewer an active participant in browsing the collection.

This sense of place and enjoyment when visiting the collection did not appear for the digital image. Finding it on their computer or on their network turned out to be a completely different activity. PR, who worked at a flexible office, had no computer at hand, and therefore redirected his search to printouts he had prepared in advance. All the other participants found material in their computer. During this process they were very focused on the single result, making no remarks on what they found *“along the way”*. They needed all their attention for the computer, sitting with their back turned to the interviewer. All participants but one located an image on their computers

by going through the directory structure. They would open one or several image files by double-clicking the file icon, or by using the *open file* menu in their graphics application. The first image was usually “*not the right one*”, after which they would simply close or click through the different images until they got to “*the right one*”. This was often accompanied by a sequence of opening and closing windows.

One participant (JB) launched a heavy PowerPoint presentation and quickly clicked through the slides on the way to the image he sought. The contents of other slides in the sequences were not discussed but referred to just as “*not the one I am looking for*”. The PowerPoint presentation eventually caused his computer to crash, and could not be restarted for the remainder of the interview. All participants clearly experienced searching for the right image on their computer as a task instead of the pleasurable activity they were subjected to in the search for physical material.

4.5 General discussion

The results from the contextual inquiry offered a rich source of anecdotes, routines and observations on the use of visual materials by designers.

CONSIDERATIONS FOR A COLLECTING TOOL

In line with the 1993 study the results of the present study were translated into six considerations. These considerations were used as guidelines for developing a tool to support the use of visual material in the design process. In the remainder of this section, we will present each of these considerations.

- 1) **Active collecting.** From the interviews we learned that, although designers could not clearly point out the reasons for collecting certain pieces of visual material, the act of collecting itself seemed to help them to set a mental image that could be recalled later. Collections of visual material can be found near the lunch desk or the printer to allow for reading them in between tasks or at moments of spare time. New tools should aim to support *collecting* as an ongoing activity, rather than *the collection* as an object. A tool should allow for flexible adding of visual material and be readily available for use.
- 2) **Merger of physical and digital collections.** In the tour, the interview as well as the get-an-image assignment, we observed designers having two completely different types of collections, a physical and a digital one, with hardly any connections between them. The physical collection was the one that surrounded their workplace and was kept as an ongoing activity, whereas the digital collection contained the images used in collages organized by project and timeframe.

- Better tools for merging these worlds can make the physical collection more useful in the communication to clients and make the digital collection more expressive, communicable, and inspirational.
- 3) **Serendipity.** Chance encounters were mentioned as an important source of inspiration, but occurred mainly in the physical world. The digital environment, with its collection kept hidden inside the computer, does not seem to lend itself to casual browsing, thereby lowering the chances of unexpected findings. New tools should therefore offer the same odds on serendipitous encounters of digital images as in the physical environment. This finding is related to the previous one in that not just should the collections merge, also the way of interacting with them should, retaining the best of both worlds.
 - 4) **Visual interaction.** The physical collection of visual material was navigated purely on designers' visual and spatial memory, whereas their interaction with the digital collection relied almost exclusively on verbal keywords. The computer has put too much of a focus on the verbal aspects (figure 13) to support collage making, which is described as creating "*a visual experience, hardly expressible in words and rarely based on words*" (Tufte, 1997). New media tools should still allow the use of verbal keywords, but this verbal interface should not be an unavoidable barrier between imagery and collages.
 - 5) **Inspiration by breaking the rhythm.** Designers talked about getting inspired by breaking away from their desks. This has other benefits as well, with designers talking positively about breaking their work rhythm during presentations, workshops or brainstorm sessions where the designers were usually standing up and using expressive gestures in drawing and presenting (Hummels, 2000). Although it is very hard to get a grip on the notion of *inspiration* in a tool or technique, involving the body and changing the rhythm are clearly positive factors on stimulating creativity and inspiration.
 - 6) **Social value of visual material.** In our observations we found that the physical collection of visual material was used to share knowledge with colleagues. The cupboards and walls were used as small exhibitions of ongoing work (figure 9) often using misprints to communicate process. By marking pages with sticky notes designers could communicate interesting images to colleagues (figure 16). These subtle social aspects are not well supported in the computers. Which were personal and closed for colleagues. New tools should allow for the same kind of subtle and ongoing communication with the digital collection as well as the physical collection of visual material.

COMPARISON TO THE 1993 STUDY

Much of our findings were in line with the Kolli et al. (1993) study on the creative work environment. Designers still use quick means such as sketching to capture ideas, gather a variety of information sources, personalize their work environments, and explore expressive styles for communication. The main differences with the 1993 situation lie in the ubiquitous use of computers, the rise of the Internet as an informative and inspirational medium, the emergence of the separate worlds of digital and physical materials.

Most of the focus of work now lies in the digital world, although the use of physical media is downplayed by most of the designers. Partly this is because a lot of time is spent at the computer, partly because most visible end products are made and kept on that computer. However, it also seems that designers don't "see" their use of physical media just because it is so fluent and unobtrusive that it can occur as a background or on-the-side activity such as doodling or rough sketching.

Switching between tasks on the computer has become quick and frequent, without the ritual of gathering and arranging all the physical stuff. Over the past decade, computers have provided many extra features, becoming more powerful at displaying expressive graphics, but have not become sensitive to the richer, more expressive use of the possibilities of the user's body. Richer input devices, such as pen tablets, are present in most design studios, but are used relatively little.

The leading visual culture that designers explore for inspiration has shifted from MTV's video style, mentioned by all designers in the 1993 study, to the visual styles used in websites. Also, the Internet has become the dominant source of visual information and inspiration.

Both digital and physical materials are intensively used, but they appear to live in two separate worlds, the former being created and used for formal documentation and presentations to clients, while the latter is mainly used for exploration and idea generation. Although there are connections between these two worlds, such as scanning hand-drawn sketches into the computer or sketching over printouts of images, the actual use of these connections are rare.

4.6 Conclusion

In this chapter a contextual inquiry has been described involving designers from different fields and backgrounds, focussing on the way in which designers gather, keep, and use visual material. In comparison with a previous study held in 1993, we found that visual material still plays an important role both for information and for inspiration. However, currently, designers

keep two separate collections of visual material: one highly structured set of digital images on the PC and another loose collection of physical artifacts and clippings living on the desks and walls of design studios. Both these collections are important, but only the former contains the material that reaches the client, whereas only the latter is used socially and serendipitously (for inspiration) in the design studio.

These findings have implications on the development of a design tool that uses the power and advantages of the graphical computers and presentation techniques, yet integrates the social use of visual material in design studios and the serendipity that is important for inspiration. Most importantly this study changed our initial view on collections of visual material from object to activity. Before this we looked at the collections as a repository of objects to answer specific design questions. After the study we identified the value of collecting as an ongoing process to keep the designers sensitive to their social, cultural and technological environment in relationship to their design problems.

The study resulted in a set of six guidelines for a visual collecting tool specifically aimed at supporting these aspects. Development of this tool is described in the next chapter. Many of these guidelines can also be used in the development of other *image management systems* or *tools for ideation*.

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