Exploring the degree to which individual students share a common perception of specific mood boards: observations relating to teaching, learning and team-based design

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Abstract

Mood boards offer a visual and sensorial channel of communication and inspiration for design research and development, which could be considered to be more logical and empathic within a design context than traditional verbo-centric approaches. This paper explores individuals' perceptions of images through a sample of mood boards. Gender was chosen as a bipolar attribute ~~of~~ and was explored through the specific mood boards. A sample of 62 design students' responses was captured via a rating scale and key words.   The paper reflects on the results obtained and attempts to translate findings into suggestions for other academic staff involved in undergraduate industrial design education.

Keywords: communication, collaborative design, product design, perception, design research

Mood boards are usually a collection of images compiled with the intention of communicating or provoking a mood or ambience during the product design process. They are often used in both establishing and agreeing an initial ambience for a product with a client and ~~,~~ during the design process, as a dynamic resource. As modern product design is more team based [1, 2]; how can we be sure that the individual designers and stakeholders in any team perceive a given board in a similar manner? If there are significant differences in perception the team may ~~in effect,~~ be pulling in different directions.

The authors decided to explore whether undergraduate design students shared a common perception when viewing specific images. ~~It was decided to focus on P~~perceptions of gender provided the focus for this study.~~from given mood boards.~~ Consumer perceptions of a product's 'gender' has been identified as a significant factor~~-~~ in product design [3, 4]. A group of undergraduate industrial designers (n=62 in the Department of Design and Technology at Loughborough University) produced individual mood boards to reflect either masculinity or femininity as directed without recourse to overtly sexual images. The group as a whole then viewed a sample range of boards and each student rated them on a 10-point scale. The results were entered onto a spreadsheet; the means and standard deviation were calculated. The ten highest rated mood boards for ~~Ten boards are discussed here; the five rated as most feminin~~femininity~~e~~ and ~~five most~~ masculin~~ity~~ty~~e~~ are presented.

The results, whilst based on a limited sample, enable discussion relating to teaching and learning issues for industrial design students and the ways in which they may be employed in team-based design.
The paper briefly explores some of the limited literature on mood boards. The method used in the study is explained. Results are presented in two tables showing the boards, means and standard deviations. These are then discussed before conclusions are drawn.

1 Background

Product research has tended to present data using verbo-centric methods despite the fact that ~~about~~ up to 80% of human communication is non-verbal [5, 6]. This may have a significant impact on the way in which designers communicate with other stakeholders in any product design process. For example, designers tend to be 'imagers' rather than 'verbalisers' [7].   Whilst other stakeholders, such as market researchers, may prefer verbal communication and find images less accessible. This indicates that multiple channels are needed within any on-going design process if effectiveness of communication is to be maximised.

Mood boards are a visual, and may be multi-sensorial (texture, movement, sound) means of communication, which may have value in assisting communication and inspiration during any designing process. They have long been taught to art and design students, but rarely has their use been analysed. They remain largely an item of faith in the design community. They should be distinguished from style boards. Style boards are usually collections of images of manufactured artefacts, which reflect parallel product placement. Which attempt to represent the type of products that the assumed user would surround themselves with, or represent a style or idealised form that is desirable in the finished product. Whilst the authors refer to two types of boards (mood and style board), Baxter [8] identifies three types of boards and three sequential stages ~~of boards~~of use:

- a *lifestyle board*, which is a collection of images representing target customers' personal and social values

- a *mood board*, which he defines as a board that 'tries to identify a single expression of values for the product' (*idib* p.222) He illustrates this with examples of single images.

- a *visual theme board*, which is a collection of images of products, which convey the target mood (i.e. same function as style boards, defined above).

It is recognised that Baxter's stages are logically funnelled from the broad to the specific. The authors nevertheless consider the first two are better conflated. ~~This is because~~ Baxter suggests that a single image can be sufficient to convey the required mood. The authors consider this an oversimplified approach and ~~that~~ rather than a single image, the juxtaposition of multiple images can convey more than the sum of the parts. In addition, textures and even scents could be incorporated to offer a multi-dimensional sensorial experience, which more accurately reflect and respond to modern product design. To some degree this view is supported by Eckert and Stacey [9] who refer to mood boards as:

> Being arranged around one central image which encapsulates the essence of that mood, with others that indicate the scope for interpretations (p529).

Note that Eckert and Stacey are focused on 'images' and do not refer to textures or scents as possible parts of a functioning mood board. They do refer to possible cultural connotations, and point out that the exclusion of certain visual elements can be revealing. A point that emerges in the discussion of results below.

Mood boards have complex and multiple functions. Their primary function is one of *inspiration*, both for an individual designer and /design team. Eckert and Stacey [9] point out that sources of inspiration play a number of important roles in design thinking: as definitions of context, triggers for idea generation and providing anchors for structuring mental representations. Their secondary function is one of *communication*. This may support the internal dialogue for the individual designer, and, in addition, dialogue between a team of designers and broader stakeholders in the product development process. This may involve communicating in an abstract visual way with non-designers, thus opening up a new channel of communication beyond the written and spoken word [10].

These two functions are to some extent brought together in the process of gathering and collating sensorial data for a mood board. This can be a valuable step in helping a new design team to '*gel*', agree a common direction and build a shared visual language [11, 12].

The various definitions of mood boards appear to agree that abstraction can be of value. The mechanism may be similar to ambiguity in design sketching which Garner [13], Eckert and Stacey [9] and Oxman [14] consider important for triggering re-interpretation and possibly fresh thinking. Nevertheless, Baxter [8] has highlighted that over abstraction can limit the effectiveness of the boards. His logic appears to be that individuals within a team may not have a shared global visual language with extreme abstractions. This is a valid point and particularly in a design team where there is a variety of backgrounds, cultures and experience. The authors recognise this point but advocate a more lateral than literal approach to the material chosen, provided that there is significant balance. At the other extreme, one of the dangers of the style board, with its more overt collection of placement products, is that it can funnel a designer's thinking and be unconsciously constraining.

Looking within an educational context, teaching and learning theory has identified bipolar scales, such as 'wholist/analyst' and 'imager/verbaliser' [7]. It could be reasonably assumed that mood boards should be perceived as active and developing tools rather than one-off static collections of images. The authors acknowledge that non-designers can and should contribute to mood board development. This is not the sole prerogative of the designer [15, 16].

2 Method

Sixty-two second year undergraduate industrial design students (43 male, 19 female) were required as part of an assignment to prepare a mood board to reflect either femininity or masculinity as directed. Each gender group was split so that half produced a feminine board and half a masculine. They were instructed to avoid obviously sexual references but to rely on abstract images and composition/construction to convey the gender intended. The 62 boards were photographed and 50 were randomly chosen and prepared for presentation to the group via a PowerPoint presentation. The boards were mixed randomly and then each presented for 10 seconds. After each slide 20 seconds were allowed for a response. Working individually, students scaled each board for gender on a 10 point scale where 10 equalled extremely feminine and 1 extremely masculine. Then each

student supplied two key words ~~that~~, which they felt, represented their perception and reaction to the image. This led to a total of 38 key words per image from the females (n=19) and 86 key words from the males (n=43). The authors used a simple, direct form of reduction [17, 18], to establish the minimum number of categories of words. For example, soft, gentle, delicate were reduced to *soft*.

The raw data was entered in a spreadsheet and *means* and *standard deviation* (StDev) were established for each board. The range of means was then sorted by the spreadsheet to give a sequential range of boards from the most feminine (highest mean) too most masculine (lowest mean). It is appreciated that the sample size is small to use statistical methods such as StDev, but it is included as it gives some indication as to the measure of agreement between the 62 individuals on any one board mean. For example an StDev lower than 1 indicates a strong agreement between students on a given mean, the closer to zero the more the agreement. A StDev over one indicates little agreement.

3 Results

Table 1 represents the five boards perceived by both male and female students as most feminine. Table 2 represents the five boards perceived as most masculine.

Considering that there were 50 images presented to the student cohort, the group were surprisingly in agreement on the five most masculine and feminine boards. For example, the five boards rated most feminine were identical for both males and females and in almost the same sequence, only the third and fourth highest boards being reversed. In the case of the masculine boards, three were common to both male and female respondents and two were unique.

3.1 Highest rated feminine boards

[Insert Table 1]

The boards perceived as most feminine were identical for both males and females. Only in the case of the third and fourth choice were two boards reversed in sequence (board 13 and 19). The board considered most feminine (board 3) also showed the highest agreement both within and between genders with the lowest standard deviation (StDev) at 0.48 for females and 0.49 for males; a significantly higher agreement than other boards. However, the student who created board three (male) has used some literal female images, despite instructions to the contrary. Whereas, other boards did not use literal female images but managed to be perceived as feminine through use of colour, form, tone and texture. Board 3 was included as there were interesting aspects of composition, construction and detail.

One factor that was extremely noticeable for both male and female respondents was that both the first and fifth choices were identical and represented two, apparently quite different, perceptions of femininity; one *pink, soft* and *fluffy* (board 3) and the other being darker, more sophisticated (board 12). Looking more deeply, the words males used for the two most feminine rated boards (3 and 23) frequently included *young* and *childlike*. Whereas, the females did not mention youth but focused on terms such *calm*, *delicate* and *floating*. This is one example of the word choice showing that

males tended to see more categories in an image and those females were in closer agreement. In this case males saw young and childlike as a dimension of this form of femininity, whereas females did not. For both boards and both genders the StDev was below 1.0 indicating a high level of agreement.

[**Insert Figure 1:** Board 3 and board 12.]

Males in fact, produced the first three boards rated in terms of femininity. Again these males appear to see femininity primarily in a *girly* way and that both male and female respondents agree.

In contrast, board 12 (refer to Figure 1), as the fifth most feminine perceived board for both genders, was interesting both in terms of the words used and the image itself. In this case we have a darker, more sophisticated femininity was presented. In this case males frequently used words with sexual and seductive meanings, whereas, females made far fewer sexual references and these tended to be less aggressive. Males used terms like *seduction*, *dominant* and *passion*. Females perceived the same board as representing a *mysterious*, *strong* and *dark* femininity. The creator of the board (female) has, within the image, used some overtly feminine images (ankle, finger and navel). However, there are a number of other images, which convey femininity in an abstract manner (velvet, texture and colour).

Females produced boards 13 and 12 rated as the fourth and fifth most feminine. These two students appear to have a stronger, more sophisticated view of femininity. The StDev for the females on board 12 was 0.61 indicating strong agreement on their perceptions of this board. The males also rated it fifth at a with an StDev of 0.83, this represented less agreement than the females, but still well beneath 1.0.

All students perceived board 23 as the second most feminine board. It differed in construction from the others in that it was a collage of torn tissue paper in pastel colours. The board contained no overt images of femininity, unlike some, but it is the authors' opinion that this perceived femininity relied on its pastel colours, soft edges and ovoid form. It is interesting to compare board 19 (third choice by females and fourth choice by males) which also used non-literal images of femininity but used softer edged and pastel images. Therefore, three of the highest rated feminine boards contain ovoid forms. Simple tearing of paper and collage made board 23, whereas 19 used a computer graphics package, with sharp images within the ovoid and diffused outer edges.

3.2 Highest rated masculine boards

[**Insert Table 2**]

Both genders agreed on the most masculine board (board 9)(refer to Figure 2 below). This board had some literal male images despite the briefing they were given to avoid these (e.g. torso, chin, airship shadow). Nevertheless there were also abstract images that could be considered overtly masculine (e.g. flames, wire, rocks). This has a clear linear structure compared to the other collection of images. The student used a strong black line to divide up the images.

[Insert Figure 2: Board 9]

On this board females scored a mean of 2.11 and StDev of 1.29. Whilst the males had a mean of 1.86 and StDev 0.75. This indicates that the females, on the whole, perceived the image as less masculine than the males. The StDev of the female responses at well over 1.0 indicates much less agreement than the males who had an StDev of 0.75.

After identifying the board perceived as most masculine there was far less agreement with the other highest rated boards. Both males and females rated different boards as second most masculine. These boards (24 and 4) have only been rated in the top five by either males or females. These responses are interesting. The females' second board (24) contains literal masculine images (e.g. man rowing, man's face, bird of prey, physical action). The males rated a ~~very~~ different board (4) as the second most masculine. This board is interesting in that it is grey, flat and dull. It contains technical type images (e.g. sound mixer, electronic circuit boards, musical instrument). It is almost as if the males perceived it as masculine because it was certainly not feminine, literally by elimination. This finding parallels Eckert and Stacey's [9] observation that the exclusion of certain visual elements can be revealing.

There is a strong angularity in the boards perceived as most masculine. Though these students also tended to use technical/industrial images embedded within the overall layout.
It was noted that looking across the range, the highest rated boards for masculinity had intense, hot, colours (red, orange, yellow). The exception was board 4 which relied upon an almost uniform greyness.

Board 7 (refer to Figure 3) is interesting in that there was significant agreement between males and females as to its rating at fifth most masculine, and both StDevs are below 1.0. It partly achieves its masculinity by eliminating any femininity*.* Even though this board contains ovoids, they are fairly subliminal. The overall impression is of a fairly strong, dark and moody image. The only literal image is that of a tyre but this is relatively subtle.

[Insert Figure 3: Board 7]

3.3 General

As there were 19 female respondents and 43 males, the males generated more words. After the raw lists of words were reduced to basic categories, it was found that the females generated an average of 9.7 categories per image. The males generated 13.6 categories per image. This would indicate~~s~~ that there was a greater level of agreement between females and that males used a more diverse range of words around any given image.

The boards rated most feminine and masculine are both literal and have high visual impact. This was probably largely because the students who generated these boards failed to follow instructions on the use of 'literal' images. Looking at the words used in

6

response to boards it was apparent, generally, that males tended to include a significant number of literal interpretations with more obvious words (e.g. floral). The females responded with more interpretative words (e.g. calm, dreamy, mysterious). Males appeared to find part of the exercise more challenging. Whether this is due to their interpretation of the images, the vocabulary available to them, or masculine mores is an issue for debate.

4 Discussion

In this part of the paper the authors reflect on the results obtained and attempt to translate findings into suggestions for other academic staff involved in undergraduate industrial design training.

There was a surprising agreement within the sample on perceptions of masculinity and femininity. There was also agreement between the two genders, when looking at the five most masculine and feminine boards. A few images were to some degree literal (e.g. board 3 and 9), but it was clear that even when abstract forms were used the students were able to differentiate. Analysis of the results indicates that they were using colour, form, tone and texture effectively to convey the desired meaning. For example, in general, soft edges, pastel colours, ovoid forms (even when hinted at) and blending of images all were perceived as overtly feminine. Whereas harsher forms, linearity, darker/hotter colours, metallic, the use of dark/strong dividing lines between images all were perceived as overtly masculine. The ovoid form has a long history in relation to perceptions of femininity. The ovoid form was often used to represent the earth mother in ancient societies (refer to Figure 4).

[Insert Figure 4: Willendorf earth mother (*circa* 30000 BC, Austria)]

While softer images and pastel colours were perceived as feminine, there was also a clear bipolar effect in that there was also a separate perception of a more sophisticated femininity. In this case darker, tactile, luxurious images were used and recognised by both genders as feminine. It was interesting to note that the words used by females responding to this board were about strength, whereas males tended to respond with more sexual words (e.g. passion and seduction). Another interesting variant between the genders was that males frequently used *youth* and *young* when perceiving the other polar extreme of femininity. Females did not identify youth with this form of femininity. These findings indicate that rather than a simple bi-polar model of masculinity and femininity:

feminine ⟷ **masculine**
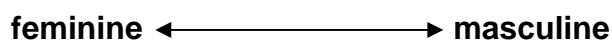
the model may be more meaningful as:

type 1 femininity

masculine

type 2 femininity

7
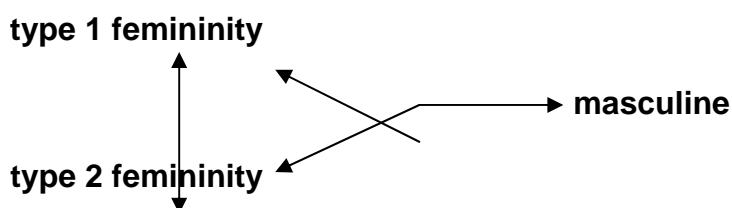
Where type 1 equals a young, girly, childlike femininity. Whilst type 2 relates more strongly to woman, sophisticated, confident femininity.

One interesting finding was the creation of an overtly masculine image by the removal of any femininity, rather than the insertion of any masculinity *per se*. Board 4 demonstrates this well. The student creating the board has avoided any of the methods of indicating femininity discussed above, but has used greyness and flatness to achieve masculinity rather than the use of darker/hotter colours. There are some 'technical' type images within the board but these are overwhelmed by the grey and flat effect of the whole. Is this a way of creation by elimination? Could it be applied in the design of products to reach specific target users?

It is generally assumed that females are more articulate than males, having a broader vocabulary. The females in this study noticeably generated significantly fewer word categories than males. One would expect that the females with a broader vocabulary would generate more categories. One explanation may be that the females have a more homogeneous perception of any given image than the males. The males tended to be more disparate in their choice of words to express their perceptions. The study showed that the males' choices of words/categories were more descriptive but they did not use emotive words/categories to the same degree as the females. The authors recognise that this area is interesting but requires replication and significant expertise in the field of linguistic analysis.

The construction and composition of these mood boards varied from a simple, physical cut and paste method to the use of computers to import and manipulate images. The study indicates that the construction and composition of the board can have a direct influence upon how it is perceived and interpreted. Relatively inexperienced users of computers do tend to use simple, linear, layouts with sharp image boundaries that, as indicated above tend to result in a more masculine perception. Those students with experience with graphics packages were more able to generate images that reflect femininity by the use of blending, softer edges and colour balancing.

Baxter [8] does highlight that over abstraction could impact upon the effectiveness of the boards. A more lateral than literal approach to the material chosen, and a balance is necessary. However, this does illustrate that further research is necessary in relation to abstraction and effectiveness rather than perception in isolation.

From the authors' experience industrial design undergraduate students often misunderstand mood boards. A survey (conducted by one of the authors) has revealed that out of 110 industrial design students at Loughborough University, whilst 93 had heard of mood boards prior to joining the degree programme, only 24 had actual experience of constructing them and using them. This is considered a relatively low proportion and subsequent work at a degree level gave the teaching staff the indication that an even smaller number of students actually use them effectively to support their designing. It is the authors' perception that the majority of industrial design students may simply respond tactically to course work requirements for mood boards rather than actually using them effectively.

5 Conclusions

These results provide an indication of the ways in which the sampled students constructed and responded to mood boards. The work requires development and replication, including the exploration of the setting of ambiences far more complex than the apparent bipolar aspect of gender. For example, where the designers wish to achieve a product, which warns of danger, approachability, reliability or for a specific cultural context.

There are growing indications that supra-functionality (social, aspirational, cultural, tribal and even spiritual) in products [20] is important to purchasers. When presented with similar products in the market place, the purchaser often relies on emotional decision-making [21, 22]. Designers and design teams, therefore, need to be able to generate and communicate such supra-functional elements at all times during a design process and within the product itself. Mood boards offer an opportunity to communicate at emotional levels.

Reflecting on the results above it is possible to identify issues, which can inform our teaching of industrial design at an undergraduate level. The concept of mood boards is not an easy one to grasp. Students can respond to the requirement to produce mood boards at a superficial level - surface, rather than deep learning [23, 24]. The results indicate the difficulty the males in the sample had with both generating emotive forms and responding to them on an emotional level.

To be effective learning needs to be planned and carefully designed to move from the simple to the complex. Teaching sensitivity to the supra-functional nature of products needs to start early and develop logically. Mood boards are one way to help students bring the supra-functional to the fore. Male students, especially, appear to need carefully thought out teaching strategies to enable them to address these aspects. The techniques of reflective learning [25] and reflective practice [26] can assist in helping students to achieve a deeper level of learning and increasing their sensitivity to the supra-functional and, more importantly their ability to raise and discuss these issues in a design team. Hence, the value of this study, in attempting to explore the degrees of commonality in students' visual perception highlights the need for a shared sensorial global language.

Experienced designers who use and teach mood boards would claim they can liberate, inspire and support creativity. In turn users need to feel that the product has a special meaning for them. This requires significant empathy, vision and flair by the designer or design team.

References

1   **Hoerr J** The Payoff from Teamwork *Business Week.* July (1989) pp 56-62

2   **Lawrence P** *You can't have world-beating products without world-beating designs*   Keynote to Design, Teams and Business Education. The Design Council, London (1996)

3   **Milner L M and Fodness D** Product gender perceptions: the case of China *International Marketing Review*, Vol 13. No 4 (1996) pp 40-51

4   **Iyer E and Debevec K** Gender stereotyping of products: are products like people? In Maholtra N K and Hawes J M (eds.) *Developments in Marketing Science.* Atlanta, GA: Academy of Marketing Science. Vol 9. (1986) pp 40-45

5   **Damásio A R** *Descarte's error: emotion, reason and the human brain* G P Putnam's Sons, New York (1994)

6   **Kosslyn S** *Image and brain; the resolution of the imagery debate.* MIT Press Cambridge, MA (1994)

7   **Riding R J and Rayner S** *Cognitive Styles and Learning Strategies* Fulton, London (1998)

8   **Baxter M** *Product Design: Practical methods for the systematic development of new products* Chapman and Hall, London (1995)

9   **Eckert C and Stacey M** Sources of inspiration: a language of design. *Design Studies* Vol 21. No 5 (2000) pp 523-538.

10   **Costa A I A, Schoolmeester D, Dekker M and Jongen W M F** Exploring the use of consumer collages in product design *Trends in Food Science and Technology*, Vol 14. (2003) pp17-31

11   **Denton H G** Developing capability and good practice in team based design work in undergraduate engineering design   In the proceedings of the second conference of *The European Academy of Design* Stockholm (1997) pp 23-25

12   **Hackman B W** Developmental sequence in small groups *Psychological Bulletin* Vol 63. No 6 (1965) pp 384-399

13   **Garner S** The Importance of Graphic Modelling in Design Activity, in *Teaching and Learning Technology,* McCormick R (ed), Murphy P, and Harrison M, Addison-Wesley (USA) (1992) pp188-193

14   **Oxman R** The Thinking Eye: Visual Re-cognition in Design Emergence. *Design Studies* Vol 23. No 2 (2002) pp 135-164

15   **Bruseberg A, McDonagh D and Wormald P** The use of images to elicit user needs for the design of playground equipment In McDonagh D, Hekkert P, van Erp and Gyi D J (2002) (eds.) *Design and Emotion: The Experience of Everyday Things* Taylor and Francis, London (2002)

16   **McDonagh D, Bruseberg A and Haslam C** Visual evaluation: exploring users'

emotional relationships with products *Applied ergonomics: Human Factors in Technology and Society*, May Vol 33. No 3 (2002) pp 237-246

17 **Radnor H** *Researching your professional practice* Open University Press Buckingham (2002)

18 **Cohen L, Manion L and Morrison K** *Research Methods in Education* Routledge, London (2002)

19 **McDonagh D and Storer I** Mood boards as a design catalyst and resource: researching an under-researched area. *Design* Journal (in press)(2004)

20 **Weightman D and McDonagh D** People are Doing it for Themselves, in the *Proceedings of the International Conference on Designing Pleasurable Products and Interfaces* Forlizzi, J, Hanington, B and Ayoob, E (eds) ACM Press, Pittsburgh, Pennsylvania, USA (2003) pp 34-39

21 **McDonagh D and Weightman D** If kettles are from Venus, and televisions are from Mars, where are cars from? In the proceedings of the 5th *European Academy of Design conference*, Barcelona, Spain (April) (2003) p 151

22 **McDonagh-Philp D and Lebbon C** The emotional domain in product design. *The Design Journal* Vol 3. No 1 (2000) pp 31-43

23 **Marton F and Säljö R** Approaches to learning In Martin F, Hounsell D, Entwistle N J (eds). *The experience of learning* Scottish Academic Press., Edinburgh (1984)

24 **Entwistle N J and Ramsden P** *Understanding student learning*. Croom Helm, London (1983)

25 **Brockbank A and McGill I** *Facilitating reflective learning in higher education* Open University Press, Buckingham (2003)

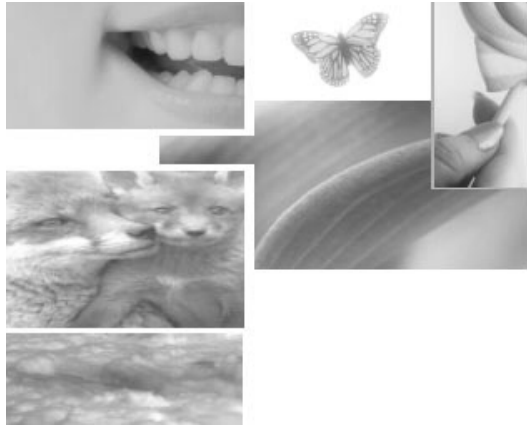26 **Schön D A** *The Reflective Practitioner: How Professionals Think in Action* Aldershot, UK, Ashgate (2003)
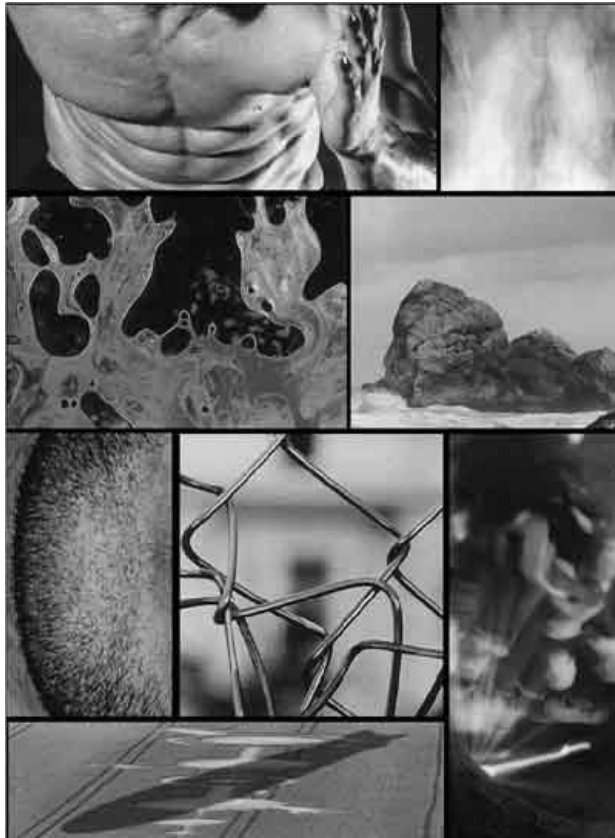
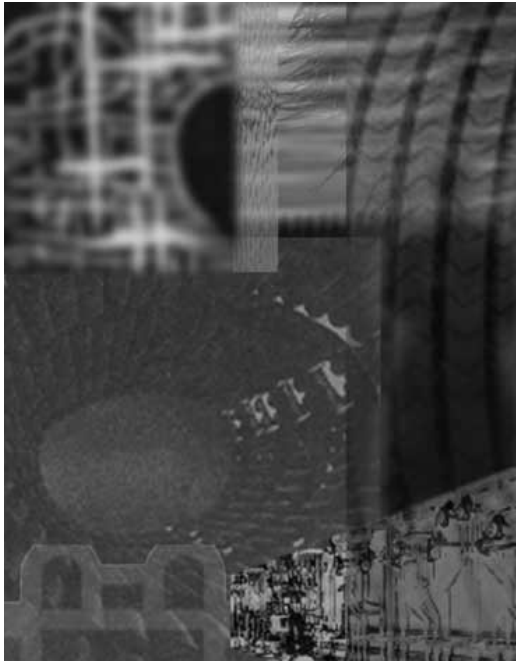**Figure 1:** Board 3 (left) and board 12 (right)

Figure 2: Board 9

Figure 3: Board 7

Figure 4: Willendorf earth mother (*circa* 30000 BC, Austria)