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TIN TIN, TOPOGRAPHICAL MAPS AND WHISKEY: THE 'CULTURAL CAPITAL' OF DESIGN STUDENTS

M. Strickfaden

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1. Introduction

Design is known to be a highly creative activity that involves the production of something 'new', the result of recombining, referencing and transforming within a specific context. Recognising that design is not conducted in a vacuum demonstrates the need to take both quantitative and qualitative approaches in design research in order to explore inspiration and motivation within the context of design. This paper explores, the concept of 'cultural capital' [Bourdieu 1984]. Therefore, a base assumption of this exploration is that each individual inherently gathers and retains cultural information, which is later utilized as inspiration and motivation during the designing process. One case study is highlighted here, involving a group of students at a university in the UK.

The use of 'cultural capital' in design will be revealed through the explicit and implicit information provided by students and tutors. This investigation begins to shed light on what types of cultural information are used by design students during the design process. This paper will focus on answering the following questions:

- Does cultural information influence and motivate students' design processes?
- If so, how is this information used?
- When is cultural information used during the design process?
- How does the information affect the artefact being designed?

Ethnographically oriented research techniques are used in order to investigate the make-up of the individual student's personal 'cultural capital'. The idea of 'cultural capital' is introduced followed by the research aims, the research scenario, the research methods, and the research results including detailed accounts of the use of 'cultural capital' during artefact creation activities.

2. Background

As previously described, this research embraces the notion that social and cultural situations impact individuals. When discussing the idea of cultural information, it is important to emphasize the values and assumptions attached to the study and understanding of culture. There are two basic assumptions made by anthropologists about culture that are relevant in this research. These are:

- that many facets of an individual's behavior are gained through engaging in various social situations and through social interactions; and
- that people learn a great deal about things that they are never taught explicitly, and that many of these things are learned through simply being involved in situations and in cultural activities.

These assumptions are central to this research in that it is understood that culture affects individuals involved in the design process. That is, it is considered that social and cultural situations can and will affect the design process. Therefore, learning and doing is considered to be more than a cognitive activity. In addition, ways of knowing and doing are unique to each group, which is called the specific culture of each group. Understanding the social and cultural influences on design are topics that have not been explored extensively by the design community. Although design is a conscious planning process, there are distinct gaps in the understanding of what, when, how and why things are communicated in the design process. The forum for design communication is social and therefore, what designers enact are social and ideological values reflected from culture [Julier 2000]. It is speculated that these in turn may be reflected in artefact design. Sparke echoes this concept by writing that cultural forces form and transform design [Sparke 1986:xix].

Even though there is little precedent for understanding the social and cultural influences on design, extensive literature reviews have revealed a growing interest in the exploration in the social and cultural nature of design. Recent work includes Ashton's [Ashton & Durling 2000] research on the notion of social constructivism. Ashton's discussion begins to get at the notion of social capital during the design process. Louridas [1999] discusses designers as bricoleurs by describing designers as individuals who collage many divergent ideas together to form a complex finished product. Furthermore, there has been a rising interest in the idea of 'design culture', which is emphasized by work such as Rodgers [2003] and Julier [2000]. Rodgers speculates through a series of interviews with well-known western designers that there is a 'cultural DNA' that is common to all designers (Rodgers 2003). Julier's book, titled *Design Culture* [2000], includes information about the make up of western society's designed world. Research relating to how understanding 'cultural contexts' are viewed as aiding to the marketing and design of artefacts for global sales and consumption [Jordan 2001] and is currently an area being explored in design. Jordan states that the cultural background of users can influence how they interact with artefacts.

Since the idea of culture is valued in the design discipline it is not a stretch to state that the cultural background of designers can influence the *designing* of artefacts — this is the central thesis of this research. The idea that individuals and groups hold cultural information means that this information is accessible as a resource bank. Therefore, this cultural information can be seen as a seed-bed for growing micro-organisms whereby information can be drawn upon at will anytime. The cultural information drawn upon is from within and from outside the design domain and can function as raw material for concept generation and ultimately for designing. This concept that cultural information can be transmitted is not new in the realms of anthropology and sociology. For example, social anthropologist Pierre Bourdieu [1984] discusses the notion of social reproduction. Bourdieu developed this class-based theory called 'cultural capital' that considers the non-explicit activities of everyday life as defining individuals [Julier 2000]. He feels that 'cultural capital' is acted out through the individual-personal everyday activities. Social theories such as this begin to get at the idea that cultural information exists as a significant force; however, these theories do not reveal how 'cultural capital' may relate to educational or practical situations such as design. Therefore, this research explores the concept of 'cultural capital' in the context of design education and artefact production.

3. Aims

Specifically, this study explores the relationship between the 'cultural capital' of industrial design students and their artefact creation process. The implications of revealing the existence 'cultural capital' in design education will add to developing the curriculum and the development of future artefacts. The aims of this paper are:

- to measure the proportion of taught explicit information and cultural information transmitted during the design process;
- to provide examples of cultural information types;
- to begin to understand the relationship between cultural information and the final artefact design.

The outcomes of the case study are presented quantitatively and qualitatively. It is the intension of this researcher to present a more holistic report on the design process. It is understood that this case study is done from a particular perspective and approach; however, the methodology employed is considered to be compatible with the overall research aims of this project and with the complexity of design.

4. The Research Scenario

4.1 The Site: Napier University

Napier University, in Edinburgh Scotland, is considered to have one of the premier design programmes in the UK and offers a BSc (Hons) industrial design programme; BDes (Hons) design futures and BDes (Hons) interior architecture. Industrial design is taught in the School of Design and Media Arts in the Faculty of Humanities and Social Sciences. Traditionally, the School of Design and Media Arts guides the students through an interdisciplinary programme, with service modules taught through the School of Engineering. Napier University was selected as a fairly typical design university, with a cross-section of student abilities, socio-economic levels and some cultural diversity. Napier offers honors level degrees in all areas of design, which indicates that the students have likely chosen the programme as a career move towards a design-related profession and are not simply taking the programme for general or recreational interest.

Figure 1. The BSc design studio, Napier University and the computer barns

4.2 The Design Problem: design an in-flight meal tray

A design brief was selected from one of 23 categories sponsored by industry in the prestigious British Design and Art Direction Award (D&AD) competition [http://www.dandad.org]. This external brief was chosen in order to control the subjectivity of the tutor involved. *Virgin Atlantic Airlines* and *Corus Steel Packaging* sponsor the chosen design brief. Current meal trays (see figure 2) are relatively standard across airlines and *Virgin* wants a trademark meal tray that will be manufactured by *Corus*.

Figure 2. An existing meal tray design

The design brief and design scenario is considered to be consistent with those common to educational and industrial practice. The design problem is considered to be relatively complex because of the layered requirements, having multiple stakeholders (*i.e.,* the tutor, *Virgin, Corus*, the users), and the limitations involved with using particular materials and manufacturing processes.

4.3 The Participants and Researcher

Twelve undergraduate students and one tutor were selected as the primary participants in this study. Two other tutors took secondary roles by providing additional information about other modules and the Napier BSc programme. This particular social group was selected because of the manageable and limited size, and the willingness of the group to participate in a lengthy study. The students and tutor were treated equally, all as participants, in order to maintain research distance and to provide a reassuring environment for the students.

All participants knew the researcher on a collegial level prior to beginning of this case study. It was common knowledge that the researcher had practiced and taught in the field of industrial design; therefore, the researcher was a participant-as-observer. The role of the researcher became known as that of 'listener' because the majority of her time was spent as an observer to the process. She remained personable, but distant from the group the remainder of the time. It is speculated that the researchers rapport with the participants enabled a more natural flow of information.

4.4 The Duration of the Study

The tutor who has an understanding of the design problem and of the students involved determined the length of the case study. Six weeks was established as the appropriate length of time for the students to work through the D&AD design brief. The group of participants met once per week for approximately 6 to 8 hours per day in a classroom setting. Throughout this paper, the days are referred to as sessions 1 through 6. This research into the design process is considered to represent a realistic snapshot of a design problem in totality.

5. Methods

Design learning is recognized as being multi-dimensional and contextualised, which includes aspects of culture. An ethnographically oriented and multiple-methods of data collection are used in order to create a more holistic research scenario that reflects design learning. These methods include:

- observation to view naturally occurring information over an extended period of time;
- informal interview questions derived from the observation;
- questionnaire procedures to query personal details about the students' and their tutors';
- videotape to document the verbal and visual;
- still photography to document the studio context and the visual representations used- and created-by the students;
- note-taking during interviews and observation to support the videotapes and photographs.

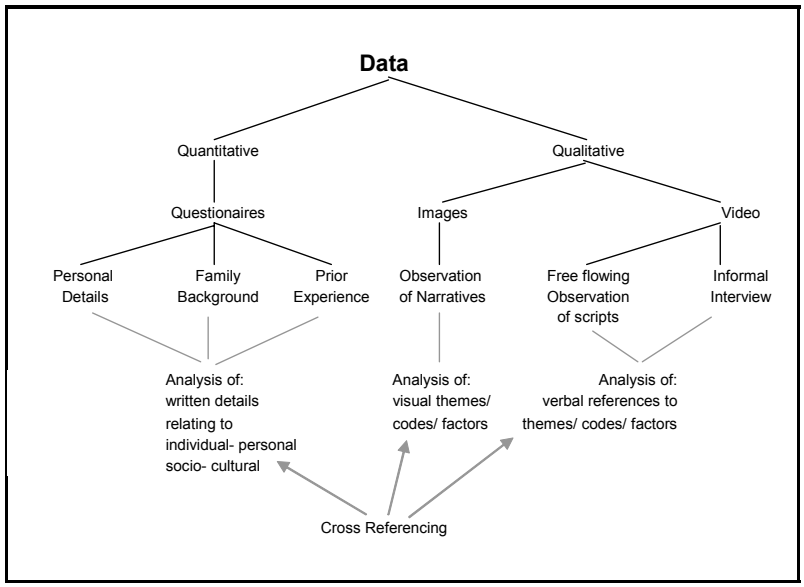

Figure 3. The methods including collection and analysis based on Denzin & Lincoln [2003]

In this way, the design process is seen from many viewpoints at once and information can be cross-referenced (see figure 3). The use of multiple-methods and the three collection devices provide vibrant, suggestive, engaging and passionate examples of a range of information about the designers, artefacts and context of design creation in an educational setting.

6. Results

In order to determine the nature of the information provided by the participants, factors were created in the categories of explicitly taught and cultural information sources. These can then be contextualized and cross-referenced against one another. Cross-referencing, for example, is done by first speculating which information type represents cultural sources. These are then checked against other background materials such as questionnaires to determine if the information source is indeed cultural in nature. Contextualization and cross-referencing is key to this study in that it reveals hidden connections to explicitly taught information and enables the accurate categorization of information types. For example, when one participant discussed children's games (which initially seemed to be a cultural reference) the questionnaires were checked for any relevant information such as the participant's prior education. With this participant, the reference to a game seemed to have come from a childhood memory but after cross-referencing it was revealed that the participant had worked with a design company creating games during his design work placement and it was actually an explicitly taught reference. Contextualization is crucial to accurately categorizing the explicitly taught and cultural information.

The details of 'cultural capital' are reported quantitatively and qualitatively and are presented in the following five sections. These sections begin by defining explicitly taught information in the context of the design process and the D&AD brief. This is followed by a sample of references to cultural information to illustrate the occurrence and purpose of cultural information. The distribution of explicitly taught information and cultural information follows in the third section. Cultural information is traced through the design process in the fourth section and the results are summarized by providing examples of how cultural information is embedded in the final artefact design in the final section.

6.1 Explicitly Taught Information

The factors relating to explicitly taught information are defined through the design process. Each participant was tracked session by session to determine the activities they were engaged in and how these related to the generic design process [Ulrich & Eppinger 2000]. Figure 4 illustrates an aggregate breakdown of detailed activities that occurred during each session of this study.

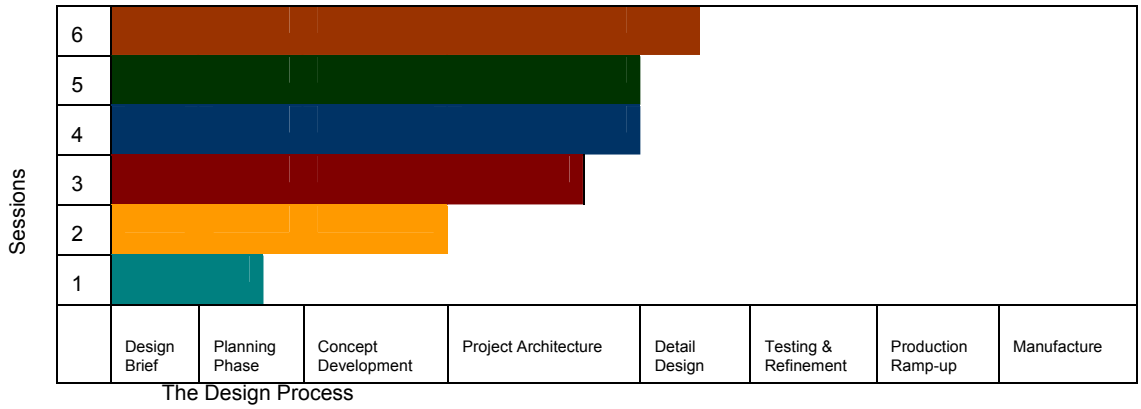

Figure 4. The design activities that occurred during each session in this case study

Outlining the design process activities during each session illustrates that the design of the *Virgin* in-flight meal tray did not progress past the detail design phase in this study. In addition, planning and concept development occurred from session 1 to 6. This means that the many participants did not move beyond the concept phase of development. In the group of 12 students, only one participant

constructed a refined physical model that was fully detailed to be prototype ready. The implications of the participants working through such a limited range of stages in the design process, is that the materials drawn upon in investigating cultural information is narrowed. That is, the 'cultural capital' of design students will only be understood as they relate to concept development and not beyond, in this study.

Other specific details of the design process relative to the D&AD brief include:

- brief specific details;
- elements and principles of design;
- the stakeholders in a project;
- modes of communication; and
- other (*i.e.,* materials, manufacture, aesthetics, function, technology).

Along with the generic design process, there are other explicitly taught factors that are relevant to this case study. These are part of the design process and are understood to be explicit through cross-referencing the data gathered in this study. These include modules taken in previous years or engaged in during the participants' current study. In addition, previous project work and design work placements were also considered to be explicit. These are all considered so because the information referred to by the participants are traceable pieces of information that can be taken back to a source in the students' educational process. For example, many participants make reference to previous modules such as one involving concepts relating to sustainability. These references contain specific information about materials, manufacture and/or concepts that assist in working through the participant's D&AD design brief.

Other explicit sources of information include specific references to design and designers, which are categorized in this study as research sources. Even though the tutor does not always directly and explicitly provide the information gained from the students doing research, it is information that is gained through a process that is recognized both within the design process and within educational settings (*e.g.,* research as a form of learning to be applied to project work). It is this readily accessible information and information gathered through the participant's individual understandings of the design process, specifically gained to apply to their artefact, that make up other aspects of the learning experiences.

6.2 Cultural Information

'Cultural capital' involves information that often seems irrelevant to the design process and generally relates directly to the participant. These references are non-linear and abstract relative to the design process, previous educational experiences and research sources. Some of the participants who are more aware of their design process tap into cultural sources, however; in general the majority of participants are unaware of using cultural information. Cultural information is best described as the information and influences in the design process that are indirectly transferred to the artefact.

All the information gathered from participants was woven together like a tapestry. Many short statements contain explicitly taught information fragments and cultural information all interwoven together. However, through carefully defining the information sources that are explicitly taught, the statements could be unpacked. For example during session 3 one participant said,

> *I like the shape … it is like the old whiskey tin boxes that the 'Glenfidich' comes in. I've got loads of them back home. My dad likes to collect those.*

This statement is very telling about an element of design (the shape), and also about the individual and their 'cultural capital' (whiskey and *Glenfidich*). The reference to shape is the focus of the discussion and is a common theme between the students and tutor. The reference to 'whiskey tin boxes' is a way of creating an analogy with a known object that conveys visual imagery that speaks to the people in the group about many things simultaneously. These layers of meaning can be unpacked:

- Whiskey is made in distilleries in Scotland.
- *Glenfidich* is a known type of whiskey that is mid-range in price, but known as being high quality.
- Scots are proud of their whiskey and whiskey making.

- Whiskey is a man's drink.
- A person who drinks whiskey is thought to be cool but upper class.

The reference to whiskey is therefore an excellent example of 'cultural capital' for several reasons. That is, it relates to the participants individual-personal experiences and also his cultural background. This particular participant is a young Scottish male who is proud of his heritage and of his middle class status. He finds inspiration in things and places that define his culture and he wants to celebrate these in his design work. In addition, this participant speaks of his father, which is an individual-personal reference that tells of a person who relates to and is supported by his family. These references become highly significant in investigating 'cultural capital', and ultimately to constructing a broader understanding of the design process relative to culture. It could be said that the values of this individual are affecting the way he is designing. This participant seems to believe that his values bring added meaning to his design work on a personal level, and can aid in creating a connection with his audience (which is demonstrated by his artefact outcome in section 5.5). In addition, this student is perpetuating values inherent to western culture by using his 'cultural capital' to aid in the design process. By unpacking the short statement in this way demonstrates the power of communication in the design process, and the embedded references to meanings and culture.

Another example of the use of 'cultural capital' took place during session 2 and was stated by another participant who describes a childhood memory,

> *Go back to children's stories. Like handkerchiefs ... they carry handkerchiefs and they take it all out then put it back together and like 'Puss and Boots' ... or something ... they hang it back on the wall.*

This participant refers to his childhood and a visual memory of actions that are relative to user-experience and possible design features for the meal tray. Again, a range of information is represented in this excerpt. The exact story of *Puss and Boots* and accuracy to that story scenario are not relevant. It is what is being described, what imagery is evoked, and why the example is used that is significant. The imagery tells about how an artefact might work and how users may engage with it. This participant is exploring the notion of transporting food creatively, packaging and experiencing food differently, and then a possible way of storing the food and packaging at the end of use. By evoking this memory of a childhood story, a powerful mode for communication about the artefact is evoked. This participant tests a number of different ideas in safe yet interesting ways through using his 'cultural capital'.

On the most part, it is the rich descriptive-types of references shown in these two examples that are of the greatest interest to this researcher. It is these types of examples that are traced throughout the design process of an individual participant and are sometimes attached to the final artefact (see section 5.5). The participants involved in this case study provide fascinating accounts about how they connect with cultural information from their past in the creation of their present design project. These include linear and abstract references to artefacts, events and examples of popular culture such as references to:

- childhood books and stories such as *Puss and Boots* and *Tin Tin*;
- significant life events such as travel, hiking and using topographical maps;
- and references to specific cultural artefacts such as musical instruments, motorcycles and whiskey tins.

In this research, 'cultural capital' is information that relates directly to individual experiences and memories (individual-personal) and those that relate to social and cultural situations (socio-cultural). On the most part, the individual personal references are related to personal experiences or interactions with things. Socio-cultural references are generally related to popular culture including films, television, music, books, and magazines. In addition to these, there were several references to 'high culture' such as religion and museums.

6.3 Distribution of Explicitly Taught and Cultural Information

Having defined the two major categories in this study and provided a number of examples, these can be described quantitatively. The distribution of references to explicitly taught and cultural information over the period of all sessions in this study is represented in figure 6.

EXPLICITLY TAUGHT		CULTURAL	
Design process	74%	Individual-personal	12%
Research	9%	Socio-cultural	5%
Total	83%	Total	17%

Figure 6. The distribution of references to explicitly taught information and cultural information

The references to the explicitly taught information are significantly higher than references to cultural information. This is not surprising because tutors speak of explicit information and the students' respond to these prompts. In addition, students are often openly discouraged from using personal experiences, particularly for the D&AD project because the focus is on user-centered design. Even so, the tutor used a significant number of individual-personal and socio-cultural references. This study likely represents a common occurrence in the design process because cultural information is not recognized as yet, as contributing to the design process.

It is interesting to note, for comparison sake, that cultural references are markedly higher than references to research (figure 6). This is especially interesting since the tutor discussed the need to do primary research at length. In addition, the majority of the references to research were visual and not verbal. That is, the research completed by the student participants was by referencing glossy magazine imagery and physical objects. The one area of primary research that was repeatedly referenced verbally was focus group research. A successful focus group study was reported during session 1 and it seemed to permeate all other sessions. No other forms of research were referenced on such regular intervals. Further investigation into the main sources of research that students draw upon for designing artefacts is of interest and worthy of further investigation.

6.4 Tracing the Cultural Information through the Generic Design Process

By tracing the design process and the topics discussed in and around that process, it can be speculated when cultural information is used and why. The use of 'cultural capital' occurred to varying degrees in all sessions of this study, however, references to these decreased as the participants moved towards the design-detailing phase. It seems that in this case study, 'cultural capital' is a tool used to define the project brief, and to begin planning that brief with the various permutations of concept development. Cultural information is also demonstrated as useful during the selection of materials and manufacturing processes (*e.g.*, the detail phases), but to a lesser degree. One of the major limitations of this study was that the material gathered over the 6 sessions was limited to the stages that the students reached in the design process. Further research is necessary to conclusively detail the occurrence and use of cultural information during the latter phases of the design process.

It is significant to note that there were fewer cultural references during the formal critiquing of artefacts. But at the same time, there were fewer references to any outside sources altogether (*i.e.,* research) and greater attention placed on describing accomplishments in terms of design detailing including materials/manufacture of the artefacts. The critique was viewed by the students as being much more formal than their other presentations, which may have also resulted in fewer cultural references.

Most interesting was that the majority of the cultural information was used as analogies throughout the study. Analogy seems to be an important tool for communicating ideas and to motivate idea generation throughout the design process. Cultural information used as analogies requires closer analysis.

6.5 Embedded Cultural Information in the Final Artefact

The relationship between cultural information and the final artefact are difficult to trace, as they are often just as abstract as the cultural reference. One clear example of this relationship between the artefact and cultural information was pointed out by a self-aware participant. This example involves the participant who spoke of the *Glenfidich* whiskey containers. The size and proportion of those containers directly influenced the size and proportion of the participant's final artefact. In fact, it is the rectangular form that drove this participant towards a creative solution for the meal tray and one that folded into a three-dimensional shape (see figure 7).

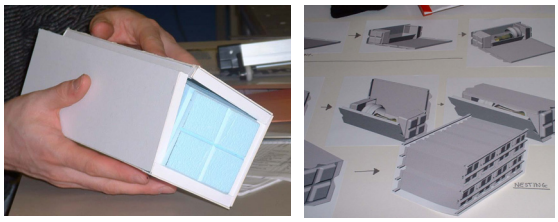

Figure 7. The final concept for a folding meal tray with the dimensions of a whiskey tin

Other references to cultural information that is reflected in the final artefact designs include separately, references to Japanese sushi and to games from childhood. Each was embedded more abstractly into the finished artefact than in the form/aesthetic of the folding 'whiskey' tray. A reference to Japanese sushi was used as a brand idea for *Virgin* and became a colorful graphic component in the final proposed design. More than one participant used references to games because it was thought that games would create a unique user experience. In one instance, a variety of games were proposed as part of the meal tray. These were designed to encourage the passengers to steal them, which was considered to be an appealing way to enhance the user experience.

The results of this study indicate that 'cultural capital' is a resource for industrial design students during the design process. In addition, this cultural information comes in a variety of forms and can clearly contribute to the final artefact designed. But most importantly, this research demonstrates a need to continue to explore the social and cultural realms of the designer in order to reveal to what extent these forces affect the design process and artefact.

7. Key Conclusions

With an increased focus on teamwork in design in recent years, the specific contributions of individuals have been veiled and camouflaged in the design process (Heskett 2002:70). In addition, by focusing on 'cultural capital' the designer as an author and/or a design team as many authors are identified as a significant part of the design process.

This study has been a success in relation to the aims established at the outset. Tangible examples of 'cultural capital' and the occurrence of these during the design process (*e.g.,* when, why, where) have been established. Another success in this case study is the application and use of appropriate methods in order to acquire the desired data. The contextualization of the cultural information demonstrates the need for interdisciplinary research and a clear definition of the approach in that research. That is, an holistic study in this case is necessary to accurately investigate the range of desired information, which is supported by research precedents in the discipline of anthropology. Furthermore, a mixed method approach allowed the information gathered to be cross-referenced. Without the questionnaires, interviews, observations and photos, it would have been impossible to accurately define and reveal cultural information.

Along with the successes, this case study has revealed the need for further research on the topic of analogy-use. Analogy-use has been revealed as the central vehicle used in communicating cultural information. Furthermore, a study involving another culture is desirable in order to clearly define 'cultural capital' and cultural information in the context of other groups of people involved in the design process. In the discipline of anthropology, it is through comparing cultural contexts that rich information is revealed on this topic of interest.

In closing, it can be concluded that cultural information is a major contributing factor to the development of an artefact. The designer is commonly known as an individual who is acting for the public and in the audience's best interests with their concerns at the forefront. This may be the case, but the designer as author is not dead, as it is the socio-cultural and individual-personal factors that motivate, act as modes of communication and ultimately embed in the artefacts that are created. This 'cultural capital' is used by the designer knowingly, unknowingly, creatively and spontaneously throughout the design process in order to communicate, motivate and inspire towards a finished designed artefact. After all, each organism is born in an ecosystem to survive in the context of that

system. Artefacts are born in the context of an ecosystem because they must survive in that ecosystem just like the organism. That is, the artefact's ecosystem is one that contains other artefacts and the experiences that surround people's interface with the designed world of objects, places and spaces. In the case of design, those objects and experiences relate to the immediate context of everyday life and the larger context of the media saturated world.

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Megan Strickfaden
Tin Tin, Topographical Maps and Whiskey: the 'Cultural Capital" of Design Students
Napier Universtiy
School of Design and Media Arts
Merchiston, 10 Colinton Road
Edinburgh, EH10 5DT, Scotland, UK
Telephone: +44 (0) 131 455 2678, Telefax: +44 (0) 131 455 2292
E-mail: m.strickfaden@napier.ac.uk