A CREATIVE AND SYSTEMATIC COLOUR EDUCATION FOR DESIGNERS

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ABSTRACT:

Colour is one of the most important visual variables that determines our perception and comprehension of the world. Colour is unfortunately often neglected at any design education level and area, although it represents the only design variable able to visually translate many other aspects related to function, technology, ergonomics, perception, semiotics, norms, socio-culture, marketing, and aesthetics.

Today's colour knowledge is considerably influenced by a communication problem among different disciplines and types of expertise with different viewpoints, tools and methods, terminologies, and cultures.

The previous PhD research "Colour Design Edu.System. For a systematic and creative approach for an interdisciplinary colour education in design", and the ongoing work at the School of Design of Leeds University will allow to investigate and propose a toolkit and method able to support students, and teachers too, in the construction of a personal colour knowledge oriented to the contemporary interdisciplinarity constraints, and opportunities of design processes.

KEYWORDS: Colour education; Interdisciplinarity; Creative communities

1. FOR AN ACCESSIBLE COLOUR KNOWLEDGE

Our lives are influenced by images and information; the way we perceive the world, and act, depends on the way we get and understand things and relationships. This issue is more complex, thus significant to be investigated and possibly provided of tools and methods to tackle it, if considering that "we are analog beings trapped in a digital world" (Norman 1998).

In particular, this work of research focuses on colour, both as the only design "cross-component" and object of a huge multidisciplinary and multicultural knowledge in continuous development. In fact, in the sensible world of things, concerning both instinctive and cognitive processes, which respectively concern biological and cultural facts, colour represents one of the most significant visual variables through which we can perceive, know, and understand what surrounds us. Thus colour can be considered as a significant, effective, and affective means of communication that is, from another point of view, a strategy to design any kind of interface, such as objects, graphics artifacts, spaces, or more in general environments.

Colour is a complex subject because of its interdisciplinary nature, and its articulated connection with several other variables and factors. According to the Design field it can be considered, and then used, following different roles and values, because it is the only design cross-component able to visually "translate" with more or less clout the other design components, i.e., function, technology, perception, anthropology, ergonomics, semiotics, psychology, history, norms, etc. Colour can visually codify and communicate information, working to make the visual field discontinuous, "perceptually significant" (Silvestrini, Tornaghi 1984).

Today a remarkable confusion exists concerning colour knowledge, mostly because of its encyclopaedic nature, that means the consequent impossibility of coming up neither with a

single definition, nor a truly shared culture of it. Moreover this is due also to the increasingly rapid evolution of knowledge and systems we use to learn and organise the vast amount of information we receive every time. Even if the number and importance of national and international organizations which promote the sharing of a common colour knowledge have developed in the last years, demonstrating the interest on the subject all over the world across cultures and disciplines, the problem of communication is still considerable, because of the meeting of different concepts, tools and methods, languages, and cultures.

In this context both *The Colour Scenario*¹ research (Figure 1), and the web colour platform *Coloret*² aim at monitoring the contemporary colour scenario, and supporting the development of a shared colour knowledge. Starting from these, the PhD research *Colour Design Edu.System. For a systematic and creative approach for an interdisciplinary colour education in design*³ has been developed by considering colour from the point of view of its interdisciplinarity and complexity, and by approaching them through the tools and methods of Design Thinking. In fact, as a systemic activity that doesn't tend to reduce variables, but rather model and re-set them for a prevision of possible solutions (Penati 2001), the Design Thinking allows to manage a system of unordered wires and knots, lacking of any steady structure.

To assure the development of an accessible colour knowledge for all the disciplines and 'languages' interested in it, handling it exactly as a system of unordered wires and knots, an intervention on the educational level that considers these terms of interdisciplinarity and complexity, is necessary. Today there are many colour learning opportunities, but none seems to be effectively guided to an inter-, cross-, or trans-disciplinary approach. For this reason the Colour Design Edu.System mainly deals with the key theme of education oriented to creative and interdisciplinary learning, with some reference to a *lateral thinking* approach, to provide new strategic tools and methods that can support and lead young generations to create their own way of learning about and working with colour.

¹ The Colour Scenario research was conducted by the Colour Lab, Design Department of Politecnico di Milano (www.labcolore.polimi.it), with the support of AICC-Italian Coil Coating Association, from May 2007 to September 2008.

² Coloret is a research project by Colour Lab, Design Department of Politecnico di Milano, which benefits various partners' collaboration (i.e. enterprises and international universities), and aims to monitor the contemporary colour scenario, favouring new dialogues between the different fields and types of expertise, supporting the construction of a real colour culture (www.coloret.polimi.it).

³ The Phd research "Colour Design Edu.System. For a systematic and creative approach for an interdisciplinary colour education in design" has been developed by Dr. Valentina Vezzani at the Design Department of Politecnico di Milano, Italy (2009-2012).

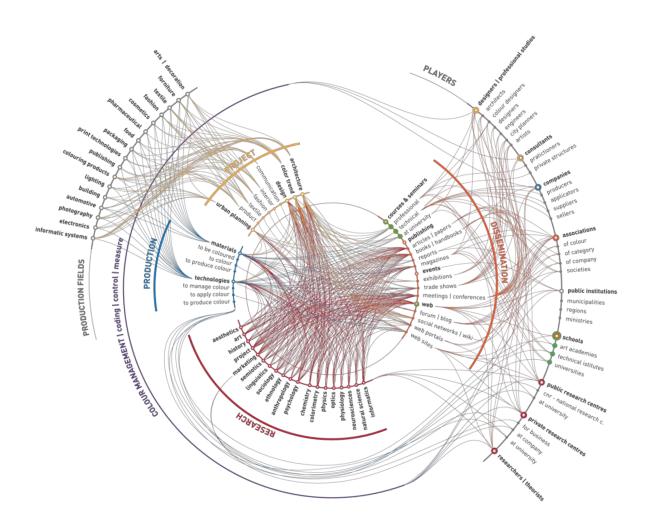


Figure 1: The Colour Scenario. Macro-areas, sub-categories and connections of the contemporary world of colour. This infographic synthesizes the complexity of the Italian colour scenario found out by the research "The colour scenario", conducted by the Colour Lab, Design Department of Politecnico di Milano (2007/08).

2. THE COLOUR DESIGN EDU. SYSTEM RESEARCH

The Colour Design Edu.System PhD research is the base for a new phase of investigation and developments at the School of Design of the University of Leeds, in particular, to define and test the concept of the CDES Toolkit previously conceived as a self-learning support for students, and teachers in colour research and knowledge. For its high complexity and interdisciplinarity level, the context of design education has been chosen especially because the CDES research and toolkit look at many other disciplinary fields interested to colour, because it can gather different cultures and disciplines together, and let them contribute to the construction of a shared culture, inter-disciplinarily, systematically, creatively, that all means "designerly".

The Colour Design Edu. System approach aims to be useful in opening interdisciplinary dialogues, thanks to its systematicity and creativity; it can bring into multidisciplinary teams or discussion tables, those features and methods that characterise the design thinking and practice. Moreover the CDES toolkit can:

st encourage the development of a colour awareness for design processes, and design

educational programs;

- * involve both students and teachers through a creative and systemic approach to facilitate the comprehension and management of the colour component in the complexity and constraints of design processes;
- * systematize the colour education model to support the shift from the research/analysis phase to the practical design one (how to apply colour theory in any design process).

2.1. CDES TOOLKIT

Because Design is one of the best case and opportunity for interdisciplinarity, the idea of a model for teaching colour has been defined starting from design environments. Design can provide methods, or better, it can be the method to access the 'meta-point' among different viewpoints (Morin 2008), and designers are mediators between various cultures, skills and 'languages'.

The contemporary colour education provides students notions mostly from numerous and different disciplinary fields without a global and practical point of view on the subject. For this reason, themes as *interdisciplinary learning*, *creative education*, *creative epistemology* and *creative society* have been analysed together with the techniques of *problem solving*, *brainstorming*, *learning-by-doing*, to select approaches and tools useful for complex learning processes and dialogues. In particular, the *card sorting* methodology has been taken into account for the structuring of the CDES Toolkit, because it is a user-centred design one useful to guide the design of an information structure, and fitting to big and complex amount of data and information to be organised in a single system.

The CDES Toolkit consists in two types of cards sets: the *Cards* to manage the research-analysis and *meta-design*⁴ phases, the *Index* to complement the Cards and stimulate deeper colour researches. This toolkit is both propaedeutic and supplemental for the colour design activity, and conceived for the personal discovery of the student that becomes independent in his/her learning activity.

The Cards were tested through *action research strategy* in 2011 at three European design schools, different for culture of colour and design: the École Nationale Supérieure des Arts Visuels 'La Cambre' in Brussels (Belgium) with students of the compulsory course "Couleur" by Prof. Felix D'Haeseleer; the School of Design of University of Leeds (UK) with students of the elective course "Colour: art and science" by Prof. Stephen Westland; the School of Design of Politecnico di Milano (Italy) with students of the elective course "Colour & Experimentation" by Prof. Mario Bisson.

The testing phase brought to define the *Cards* in their contents, structure and graphic solution, then also to design the *Index* structure, its general contents, and use. The graphic choices have been fundamental to connect the *Cards* to the *Index*; the characteristic of being a systematic tool is also revealed by this 'communication' between and across the two decks. Moreover the configuration of both Cards and Index has been defined also considering the next research developments, that is the CDES as an online platform and educational service.

On one side the *Cards* deck is designed to manage the colour component during the research/analysis and meta-design phases of a design process. The *Cards'* categories are: 1. Basic Questions; 2. Design Fields; 3. Research Fields; 4. Theme; 5. Production & Materials; 6. Colour Issues (this last group of cards is systematically linked to the *Index'* "colour issue" group).

⁴ *Meta-design* can be also defined as an emerging conceptual framework aimed at defining and creating social and technical infrastructures in which new forms of collaborative design can take place (Giaccardi 2005).

The *Index* is complementary to the *Cards*, in fact, through brief descriptions, references and practical exercises, it would provide those notions that the *Cards* just question or suggest to learners. The idea of a classic colour handbook was given up to define, on the contrary, the concept of another system of cards structured according to five sections: 1. Support (explanation of the system of cards and methods to use it; description of the design process and the role of colour as a design component); 2. Index Introduction (how to use the Index, with and without the Cards; the future development on the Net on a special online colour platform); 3. Index Cards; 4. Glossary; 5. Bibliography.

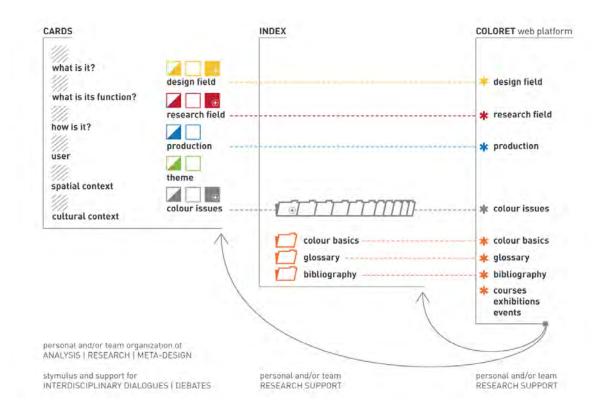


Figure 2: The Colour Design Edu.System Toolkit: a general scheme of the structure and relations between the Cards, the Index, and the future sections of the online CDES learning service.

Considering both the experimentations with students and the needs of today's learning environments, the CDES Toolkit has to be considered as an integration and teaching aid to those didactic activities, such as theoretical lectures, short practical exercises, short workshop experiences. In fact, today the concept of "courses as seeds" is taken more into account; it deals with an educational model that aims to create a culture of informed participation in the context of university courses and yet extends beyond the temporal boundaries of semester-based classes. Courses are conceptualised as seeds, rather than as finished products, and students are knowledge workers who play an active role in defining what they will learn. It is in this context that the CDES Toolkit has the aim to educate learners to colour at a basic, practical, then also advanced level, encouraging them to the autonomous and deeper research for a personal, systematic, interdisciplinary, then also open and active culture of colour (Vezzani 2013).

3. FUTURE RESEARCH STEPS

The CDES is an opportunity to overlap the cultural and disciplinary barriers (between art, science and technology) that still exist and don't ease the rising of innovative and potential contaminations in the field of colour and colour design. Considering that colour has a very important role in communication and affective design, thus fundamental in communicating information and create any emotional appeal, the ongoing CDES research aims to define the CDES Toolkit as an effective means of knowledge, and new systematic and creative opportunity to educate about colour starting from design contexts.

Because today it is necessary to provide creative and systematic tools and methods that can educate to/for complexity and interdisciplinary knowledge, the CDES research aims at solving this contemporary issue considering firstly high level education as a pretext to spread this new approach to colour knowledge and build upon the current state of the art considering the aspects of Interdisciplinary Learning, Creative Education, Design Thinking (design as a tool in and for complexity), Creative Society and Social Creativity.

At the School of Design of Leeds University, the CDES Toolkit will be tested again through new workshop sessions with students and teachers, trying to involve also other types of disciplinary expertise thanks to the University structure; these will be an opportunity to disseminate a new way of researching and working in team interdisciplinary and creatively, and to evidence some little gaps in the toolkit before the publishing as a learning product.

Moreover, the CDES research will be developed also as a digital space where making visible and social the CDES approach itself (probably relating it to a specific section of *Coloret* web platform). The Net is already the main "place" where general knowledge currently develops and evolves, thanks to the action of the growing *digital communities* and contagious *social creativity*. Internet will be more and more crucial even for the educational system, because today we can already understand the next trends, for instance, considering the development of the *Open University* and *MOOC, Massive Open Online Courses* (large-scale participation and open access courses). In this context, the CDES will be an online learning service, based on the direct participation of numerous types of expertise, disciplines and cultures interested in colour and its knowledge evolution. Creative, design and digital communities will be able to establish an interdisciplinary and systematic approach to colour knowledge, considering the needs and constraints defined by society, as well as the market and industry.

4. CONCLUSIONS

Because many different types of expertise, disciplines and cultures can readily access and use different and articulated aspects of colour, even the most specific notions, a systematised knowledge must be provided. To systematise means to provide an elastic structure of macro-themes (as main containers of information), nodes (specific topics), and connections that can be selected and re-organised on different levels, on the basis of one's objectives, interests, and context. According to this idea, the CDES Toolkit has been conceived as a system of cards that support the activities of research (as a personal investigation and knowledge enrichment), dialogue (supporting the exchange with other disciplines, finding a common 'language' to understand each other), and design (by visually organising information and steps, and above all, coordinating the activities).

The CDES has been conceived by considering also the Net as the main "place" where general knowledge currently develops and evolves, thanks to the action of the growing *digital communities* and contagious *social creativity* (Fisher 2004); in fact, the CDES is going to become an online learning service based on the direct participation of numerous types of expertise, disciplines and cultures interested in colour and its knowledge evolution.

Creative, design and digital communities will be able to establish an interdisciplinary and systematic approach to colour knowledge, considering the needs of society, especially, as well as those of the market and industry.

Sharing is a new way of knowledge production which creative expertise grooves on and this is what happens mainly in the wider creative community of the Net (Ciuccarelli and Valsecchi 2007). By the statement that everybody can assume the role of designer, contributing to the project of a real colour culture, it can be said more to give force to the objective of supporting the joining of people and the creation of design communities for colour knowledge (Vezzani 2012).

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