HOW EXPERIMENTING WITH NETWORKS AND THE DATA THEY GENERATE CAN CREATE LAYERED SEMANTIC AND VISUAL COMMUNICATION DESIGN?

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ABSTRACT

This paper will look into whether experimenting with networked processes and input in the production of graphic design can challenge the formal relationships between everyone involved in the creative process, stimulate dynamic readings and interactions and make use of contemporary information chaos. Considering economy, social structure and modern technology, parallels will be drawn between theory and practical examples. This will help to better illustrate the mechanics and creative use of the network and the data it produces, while setting up a broader research context for design practitioners to reflect on.

INTRODUCTION

With the imminent collapse of the current economic model, communication design has found itself to be commercially unstable. In order to adequately respond to the shrinking market opportunities and uncertain social moods, many design practices have shifted their focus away from fixed outcomes towards creating more adaptive platforms and environments.

Supported by the networked convergence of technology, the social aspects of Web 2.0 have significantly altered the structure of society over the past decade. Today, the way that people build their identities, relate and communicate to one another, as a network of interconnected and co-dependent units, is projecting the ontology of a computer into culture (Manovich, 1998). The cybernetic dream envisioned by 1960s Californian ideology, has materialized into a society where connections are more important than division, and human beings linked by computers have the power to collaboratively create their own kind of order (Curtis, 2011).

The rapid democratization of technology and the present economic environment has allowed “distributed labour networks [to be created] using the Internet to exploit the spare processing power of millions of human brains” (Howe, 2006). The ability of technology to connect people globally has also erased the gap between professionals and amateurs: this has cemented the open source movement from which numerous community based enterprises have sprung up, such as *Wikipedia*, *InnoCentive*, *iStockphoto*, *Wordnik* and many more. To further support the collective generation of content, the *Creative Commons* license has fundamentally challenged the former top-down methodologies of the graphic design profession. The free circulation of knowledge and content outside of the market sphere has marked the move "towards a culture of the use of forms, a culture of constant activity of signs based on a collective ideal: sharing” (Baudrillard, 2002, p.9). Recognising that the production of graphic design is no longer limited to a privileged few, designers are slowly abandoning the notion of authorship, in favour of a more important asset: people.

Questioning the way designers are expected to work by welcoming social engagement, and encouraging an open public dialogue about their working methods and role in society as a whole, designers have piloted controversial projects in pursuit of an alternative, non-monetary value

of their work. "No big idea, no one-size-fits-all and no design as an author" (Davies & Parrinder, 2010, p.23)

The social moods of the time are also reflected in the production of contemporary graphic design, through putting considerably more emphasis on research.

Herbert Simon argues that:

> *design and design research share with engineering a fundamental interest in focusing on the world as it could be, on the imagination and realization of possible futures, as well as on the disclosure of new worlds (Simon,1996 in Grand & Wiedmer, 2010, p.2).*

In this regard, it is no surprise that research-oriented graphic design practices are increasingly experimenting outside of the commercial environment, with alternative production processes, mutant outcomes, social platforms, multiple communication layers and complex interactions. This type of design practices often start off with self-initiated projects that rely on a critical reflection on "the contingencies of our world today, and of the practices for creating, imagining, and materializing new worlds" (Grand & Wiedmer, 2010, p.2). It is exactly the methodology used in these experiments that provide a practical key for understanding the scope of the network, and its relevance to the creative industry today.

CURRENT PRACTICE AND THEORY

Currently, only a few experimental designers are reinforcing a resource-conscious mode of production, increasingly using the public as a "responsive, reflexive, and thereby a responsible and empowered entity" (Varnelis, 2009). Allowing people to exercise a certain amount of control within a set framework, provides a diverse input which could be adopted at any point in the creative process, and used for creating meaning and materiality through collaborative negotiation. This has slowly pushed the design discipline forward through combining production and consumption in a creative prosumption.

Extracting "unexpected but correlative, emergent patterns" by setting up logical "conditions through which the [design] process can take place", has moved the focus towards the logic of the process used, and the resultant "formations rather than [the static final] forms" (Wouters et al, 2008). These formations have enabled graphic designers to detect emergent trends and to use them in the creation of meaningful and response-able communication.

On a larger scale, this methodology has prompted an evaluation of the totalitarian approach to design, and an elevation of an experimental set of processes that allow dynamic models to be built for communication between people, designers and clients. With the recognition and popularisation of these processes, the mainstream graphic design practice "has [also] become much more fluid, interdisciplinary, it has become collaborative, open sourced, networked and linked by ideas" (Parrinder to Minkova, 2011).

The definition of the term 'networked' is not yet set, as it is broadly used to describe different types of collaborative production: both of material and immaterial content, between everyone involved in the creative process. Even though digital technology is often used at a certain point of the production process, the essence of these network experiments lies in the logic behind the way the communication content is handled, compiled and distributed.

A distinct feature of the work conceived in this way is the visually inconsistent, occasionally disturbed and seemingly arbitrary appearance of the outcomes. In addition to controversial aesthetics, networked processes used in design enable people to experience communication in a subjective, more personal way, demanding greater engagement and attention.

DATA AND METHODS

In this context, it is essential to interpret and understand the complex factors at play within the different networked processes used by graphic designers. Also, it is important to recognise that the qualities of a process are not automatically inherent to the final functioning, or distribution of the work produced. Despite the fact that some processes have the appearance of objectivity and foster greater cultural agency; they still may stem from subjective intentions (Wouters et al., 2008).

In order to portray a coherent representation of these processes, this paper will consider various primary resources: including interviews with experimental graphic design practitioners, visual culture theorists and social innovators. Equally important for gaining a comprehensive view of the subject will be examples of my own emerging design practice, which will serve as case studies in the discussion. These case studies will illustrate the practical difficulties in realising experimental projects, the visual qualities of the outcomes produced and their future potential.

Bearing in mind that networked processes often coexist with one another, their identification becomes problematic without a wider social and cultural context. Also, graphic design's lack of subject specific terminology to describe the dynamic relationships between everyone involved in the creative process further hinders the rigorousness of the discussion.

As “we need to [begin to] develop a vocabulary to talk about it so we can unpick what is really happening” parallels will be drawn between terminology, theory and concepts from other fields (Parrinder to Minkova, 2011).

These parallels could be used to further guide the discussion about possible future developments and large-scale cultural impacts of network-based graphic design. After all, speculation is one of the most underestimated elements of critical discourse, which pushes against graphic design’s persistent attempts to establish a concrete academic base. Without that confrontation, it is often the case that these attempts go in completely the opposite direction to that of contemporary culture.

CASE STUDIES

This, That and the Other

Despite the fact that new media products are considered anti-narrative, it is exactly their limitations and constraints that prompt people to constantly try to draw personal trajectories, through the sheer number of algorithmic options available (Manovich, 1998). One way of doing this is found in the process of tagging. It represents a non-hierarchical form of organisation where individuals can make sense of information, without following a predesigned structure. Social bookmarking applications such as *Delicious* and *Diigo* have set the scene for the development of shared online tag vocabularies, known as folksonomies. This decentralised form of content organisation could be used, not only to provide insights into what specific visual or textual content means for different people, but also to foster a variety of readings of the same content.

This self-initiated project *This, That and the Other* aims to examine the application of archival methodology, extensively used as a form of contemporary art practice, as well as the concept of tagging in the context of editorial design. For this purpose, a series of experimental publications are printed - the text of which references key art works such as Gerhard Richter's *Atlas*, Aby Warburg's *Mnemosyne Atlas* and Christian Boltanski's *The Reserve of Dead Swiss* - and illustrates a speculative dialogue on the possible translations of the concept of archiving in the sphere of graphic design.

This practice-based research project is split into three distinct stages, each dealing with different ways of laying down content and culminating in colour-coded copies of printed matter (see fig.1).

Figure 1: Three copies of printed matter from each stage of the project *This, That and the Other*.

The first stage is concerned with the conscious decision-making process in graphic design, where all of the elements are largely dependent on the designer’s experience and skills. Laying down the content for the initial publication in this way marks the first step of a continuous exercise in experimental editorial and narrative combinations (see fig.2).

Figure 2: A flat layout and folded print sample from the first stage of the project *This, That and the Other*.

In the second stage, each element of the layout is taken out of the confines of *Adobe InDesign* software and put into the *Processing* environment: where mathematical

operations govern the composition of visuals and text. The deconstruction of the text into individual paragraphs allows for an automated layout production, with random semantic order (see fig.3).

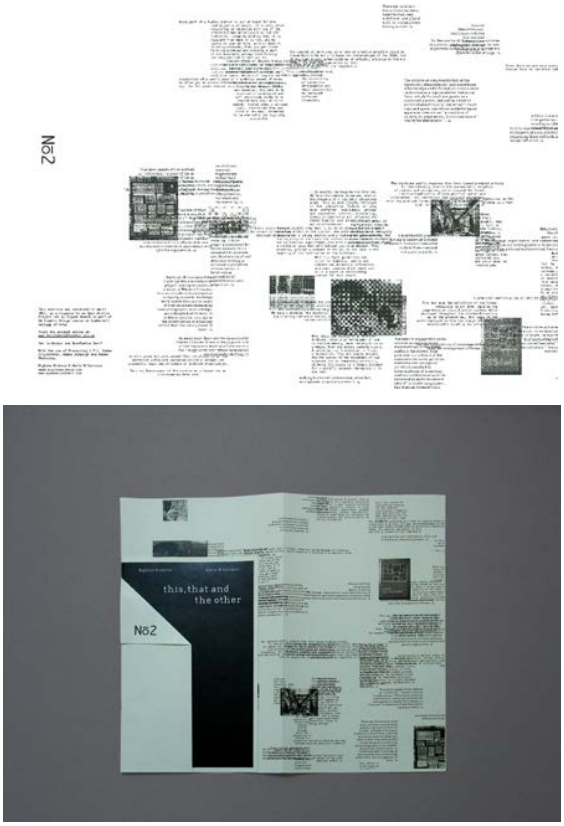

Figure 3: A flat layout and folded print sample from the second stage of the project *This, That and the Other*.

Using a programming platform as design tool to compose the layout, enables a parallel to be drawn between the algorithms embedded in the software, and the conscious decisions made in the process of designing. In order to completely avoid any premeditated outcomes, the random function of the *Processing* library is employed: this allows the possibility for entropy to exist in a designed environment. Every time the *Processing* sketch is run a new layout is generated and exported, ready for print.

The third stage is focused on testing the variety of narrative compositions that could be made through retaining the original location of the elements as anchor points for new arrangements. Each paragraph and image is indexed with parameters: such as time of writing, alphabetical order of the source, character length and the time the content was encountered. Incorporating this data in the *Processing* sketch means that there is the possibility to filter the content in relation to a chosen parameter. In this way the similarity of the structure of the initial layout is preserved, but different meanings and visuals are created “through mutations of connection and disconnection” of the text (Foster, 2004, p.6) (see fig.4).

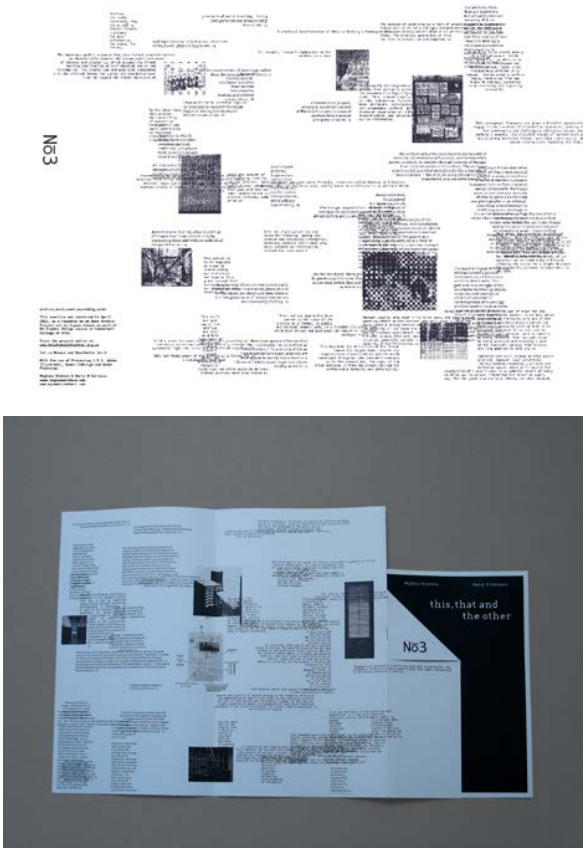

Figure 4: A flat layout and folded print sample from the third stage of the project *This, That and the Other*

The resultant set of printed materials not only illustrates the variety of layout combinations and the plurality of readings that they could have, but also serves to propose alternative orders and association methods of reading. Subjective to these factors the project remains open as “a possible portal between an unfinished past and a reopened future” (Foster, 2004, p.15).

Moreover, it is important to emphasize that despite the textual interruptions and visual chaos; the semantic relations between all elements are preserved and could be altered at any time. This quality was recognised on closer inspection by a small percentage of the audience, who were already familiar with the texts used. From the audiences' point of view, this revealed that a layout system based on cross-referencing and intertextuality of content required much more engagement, but could potentially bring new insights and perspectives.

For the designer, systematically transforming the content and recording the seemingly random visual representations, this provides a playful way for creating an expanding array of unstable and ever-evolving outcomes. The documentation of this project brought up the question of whether visual and semantic order could both be considered on an equal level when "creating a rich editorial experience" (Lucas, 2012) (see fig.5).

Figure 5: A book documenting the project *This, That and the Other*.

The relevance of *This, That and the Other* to the wider scope of *Nordes13*, is the ongoing and experimental nature of the process of its creation. At its core, it questions many of the established rules of layout and legibility, while offering an alternative, equally logical reasoning for the allocation of text. The methodology used in this project uses critical reflection to maintain the relation between the "inner system" of the layout and "the communication goal" of the printed materials, independent of variations in the parameters (Simon, 1996, p.6). Despite that this example only adopts ideas from art in a literal manner; it also shows design's potential to comment critically on its own methodologies.

Although *This, That and the Other* has an editorial focus, contemporary graphic designers experimenting with non-hierarchical and meta processes believe that there is further potential to explore combinations of different elements with the aid of community, and their changing notions of these different elements (Wouters to Minkova, 2011).

Commercially-realized projects include Jonathan Puckey's design of *SMBA*'s website, which confronts the art community with their use of language, and allows people to research these changes over a period of time (Puckey to Minkova, 2011); and NodeBerlin's design of the printed publicity for Oslo's Contemporary Music Festival - *Ultima 2011* - which uses Google image search to form the collaborative visual identity of the event.

Greetings from Google

By "inventing protocols of use for all existing modes of representation" contemporary graphic designers are expected to seize "the codes of culture, all the forms of everyday life, the works of the global patrimony", and make sense of them (Bourriaud, 2002, pp.17-18). This colossal task requires them to integrate production methodologies and processes with technological innovation, in order to grasp the context in which contemporary culture operates. With the ability of technology to freely reproduce content, the artistic question is no longer: "what can we make that is new?" but "how can we make do with what we have?" (Bourriaud, 2002, p.17). Following the pattern of the "immaterial production of information and its distribution through the network", contemporary graphic design practices could embrace the network as a dominant form of organization and a centre of the creative process (Varnelis, 2009).The Internet as a system contains a vast amounts of data - user generated, pre-designed, shared or structural - which offers multiple subtle communication paths for engaging with the public.

For example, online knowledge aggregators such as *Google* provide almost instant access, rooted and hidden behind the algorithmic handling of information, generated by millions. This takes the form of metadata or in other words: unconsciously generated content.

The project *Greetings from Google* presents a collection of such unconsciously generated content, as people become essential and active vehicles of production. This project uses *Google Instant*, a search optimization, which provides users with popular search queries as predictions when they type. This feature is active on the majority of *Google*'s local domains. The locality of the predictions given on each *Google* domain is calculated and measured up against a body of popular queries. If a certain local query prevails, it is included as a prediction on the relevant domain. Also depending on the browser settings, *Google* predictions could combine the popularity of personal search queries with communal ones, hence providing a custom-tailored search experience. This pre-designed environment could be used by designers to extract collectively conceived data and meaning on various topics, which could later be used to subvert or enhance their communication goals.

The functionality of this algorithm lies at the core of this project, which aims to capture invaluable semantic knowledge extracted from *Google*'s search engine. Based on the predictions derived from conjugating the verbs "to be", "to have" and "to do", the results tackle the question of national identity in a poetic way.

Relevant at the present but slowly updating and sinking into obscurity, the collection of a hundred sixty-six unique predictions produced as a result is committed to print in the form of greeting cards (see fig.6).

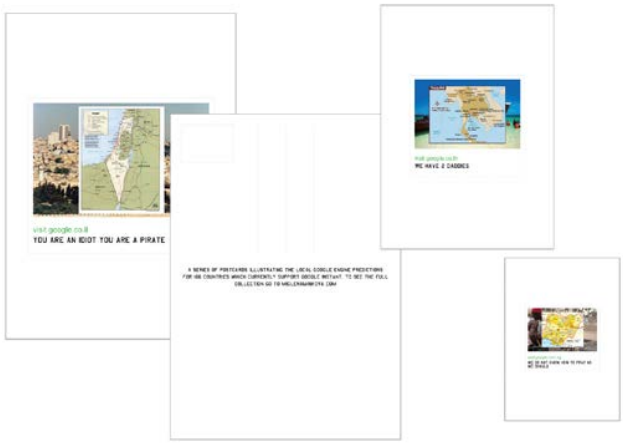

Figure 6: A sample of unique search predictions from the project *Greetings from Google*.

They show a mixture of quite ambiguous, current and often humorous search terms, the most interesting of which display clear regional differences and hidden links between the interests of separate nations. The front of each card has the first *Google* image and a map from each of the respective countries (see fig.7).

Figure 7: A display of greeting cards from the project *Greetings from Google*.

In this sense, *Greetings from Google* displays a convenient aggregation of up-to-date information which reflects the current interests of particular groups of people - through ephemeral snippets of information - making up a temporary and autonomous collection of search memorabilia. Despite some of the nonsensical content extracted from 'the Internet of things", which may seem detached from our daily lives, this project illustrates that it "isn't [really] about the things; it's about us" (Goetz, 2011). The printed ephemera itself explores the possible stories which data could reveal, as our daily use of technology is enriching the online environment with emotion and personality.

Although the interaction of *Google* users is not intended to be participative, it may seem passive and limiting to a certain extent. The relevance of this project to developing new research paths for graphic designers lies not only in finding creative ways of extracting collaboratively-conceived content and displaying meta-realities, but also in the consecutive use of this additional knowledge. Socially, it resonates with Venessa Miemis's idea of hyper-connectivity, and shows the potential of graphic designers to become meme creators, as a part of a bigger community change (Lewis to Minkova, 2011).

Text Box

Embraced during 1960's Cybernetics movement, feedback loops have paved the way for the development of today's interactive technology. The simple logic of the feedback loop, "action, information, reaction", is also used in graphic design (Goetz, 2011). Recursion, as a principle, is used not only as a visual effect but also as a way of critically commenting on our present obsession with technology.

Today, many words are falling into oblivion whereas others are constantly acquiring new meanings. The use of technology is mutating the way that we use words, imposing restrictions, confining grammar and creating generic vocabularies. Using voice recognition, the project *Text Box* explores the loss of language and the limitations of technology by continuously playing with the sound present in its immediate environment.

Text Box presents a contemporary approach to the Surrealist technique of writing, known as automatic writing; this consists of writing without being consciously aware of its content. This project uses a letter from Rainer Maria Rilke's *Letters to a Young Poet* as a starting point, and employs computerised writing without any coercion: so that the process is triggered by the sound picked up from its immediate environment. A critical moment in the functioning of the installation is the software's ability to interpret the sound, as a word restricted to the grammar file embedded within it - which instead of being a generic everyday vocabulary, consists of over a thousand nouns extracted from Rilke's original text (see fig.8).

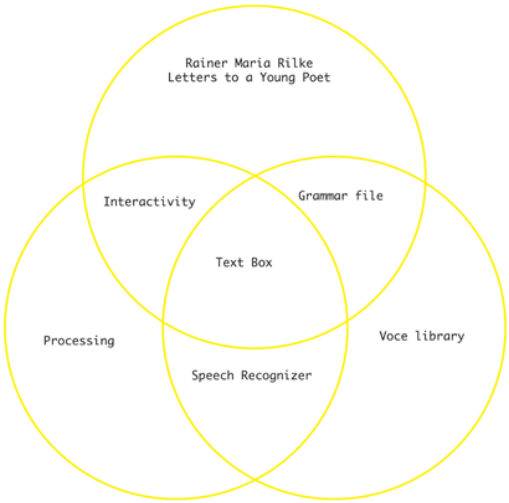

Figure 8: Info graphic explaining the conceptual structure of the project *Text Box*.

The match between the input and the grammar file is then displayed on the screen, continuously reconstructing the original letter; regenerating its content and meaning, while keeping its original grammatical structure intact (see fig.9).

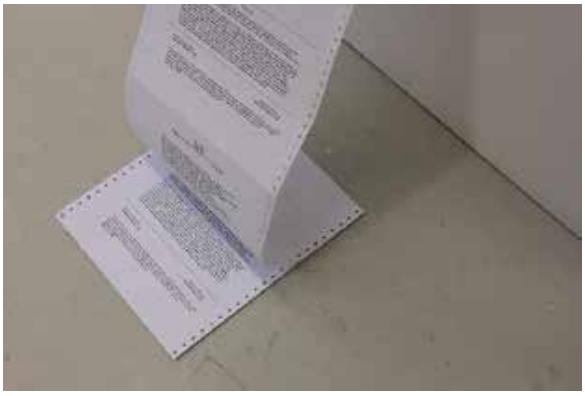

Figure 9: A printout of different versions of Rilke's *Letters to a Young Poet*.

This ambitious use of voice recognition has no functional ends: it is used to rewrite the content using only its source. Each reconstructed version is a subtle product of interaction, triggered intentionally or unintentionally by the public, or inadvertently by the environment in which the installation is placed (see fig.10).

Figure 10: *Text Box* installation.

In this case, the interaction required is reduced to a minimum. As the public is naturally drawn to the familiar read-write aspects of the voice recognition technology, this project confronts people with the inability to influence the results to the extent expected. Instead of obeying the voice of the public and displaying their words, the software uses its algorithms to associate the input with its vocabulary file, significantly narrowing down the options available. This peculiarity becomes the centre of interest for the members of the public, who carefully observe its functioning.

As difficult as it is to say something new within the closed circuit of this recursive process, what is important to recognise, beyond the mechanical aspect of this process, is the potential to convey and amplify information well beyond its immediate use or appearance (MoMA, 2011). It is within the power of designers to experiment with methodologies which derive from technology, in order to communicate the possibility of information amplification to the public. Contemporary graphic designers, fascinated by the critical and psychological potential of the feedback loop, consider that "the key work in this direction is [still] about to be made" (Wouters to Minkova, 2011).

CONCERNS

When considering ethical issues, experimenting with network processes raises some questions concerning the agency, motivation and privacy of everyone consciously or accidentally involved in the creative process.

In this context, when the designer is not the sole creator of meaning and content, it is debatable who should be responsible for determining and applying such ethical judgments. On the one hand, when carefully considering the ethical aspects of the type of processes they use, some designers are guided by the principle that "there are always design constraints and these usually include an ethic" (Eames, 1972 in Wouters to Minkova, 2011);

hence, applying the same ethics to the processes as they would to the end result. On the other hand, network processes "give enough freedom to people to choose whether to be ethical or not "(Puckey to Minkova, 2011). In this case, it is possible that the ethics governing the design process follow the rule of thumb determined by a self-regulating network of people.

Another point that could be an issue is the subliminal sense of a greater degree of social agency that networked processes give. In order to communicate the extent that social agency is real, graphic designers should define the amount of control people have in participatory and collaborative environments, by clearly assigning their role from the outset of every project. "Users are using, not giving, audiences are looking, not acting, and participants are participating, and not creating" (Wouters to Minkova, 2011). This makes the difference between designing something that facilitates a good democratic process or a bad one (Parrinder to Minkova, 2011). However, in terms of infrastructure and accessibility, some parts of this global social agency are still largely a subject of governmental censorship and monitoring.

Motivation is another key element used in network-based graphic design. The proliferation of open source and online media has indicated a shift from extrinsic motivators, such as financial reward, to intrinsic ones. Hence, some of the main reasons for people to take part in creative crowdsourcing are their desire to gain peer recognition, to develop creative skills and to have fun at the same time (Brabham, 2008). Understanding what drives people's motivation is essential for graphic designers, as it allows them to creatively collaborate with the public. However, the scale at which user-generated content could be used for free remains an ethical gray area, which is only regulated by the satisfaction people get from being a part of something they believe in.

As graphic designers experiment with technology and online content, privacy also becomes an issue of growing importance. The storage and use of personal data, as well as the advances in mining data mean that people can find information more easily than ever before. While the Creative Commons license has brought a lot of public awareness to the royalty-free use of image and text content online, the regulation of metadata and the ethics of extracting content through non-hierarchical processes are still not widely discussed. This moot point, only limited by the 'creepy line', is currently confining graphic designers to use only the tip of the available online content (Puckey to Minkova, 2011).

CONCLUSION

Despite ethical reservations, the use of networked processes in graphic design forms an evolving strand of current design research and development. Through experimentation, designers test the rigidity of the formal roles of all involved in the creative process. Existing between theory and interdisciplinary innovations in current technology, sociology, anthropology and economics; networked processes allow designers to concentrate their practice on extrapolating alternative modes of production and communication. Individually or in various combinations, these processes update the working methods of contemporary practitioners, by engaging them in an open dialogue with the public. The conceptual scenarios that design practitioners build as a consequence of social, political, and cultural interaction expose the diversity of public input and further facilitate the collective generation of content and meaning (MoMA, 2011).

Advocating a more resource-conscious and response-able form of communication, graphic design powered by human intelligence has distinctly behavioural characteristics. Yet these characteristics release design's creative potential to collect, update, aggregate, display, monitor and influence change on a large scale.

Dr. Gesche Joost sees the graphic designer as "taking on the role of mediator", able to conduct theoretical research while at the same time having problem solving abilities (Joost in Schmidt, 2009). Operating outside of commercial constraints, designers are able to evaluate situations and find qualitative solutions which are not necessarily associated with any financial turnaround. The combination of networked processes and technology could also activate further applications in documenting and forecasting social trends. With regards to theoretical production most of the changes are "subtle and only appear radical in retrospect" (Varnelis, 2009). For example, extracting semantic knowledge from social networking platforms such as *Twitter*, could help to "determine the attitudes towards various subjects and their evolution over time" (Tambouris, et al, 2011, p.50). The systems that graphic designers create can capture the nuances of change over long periods of time, and explicitly display them in reality. This creatively-conceived data could be invaluable in the context of e-governance and politics, where non-hierarchical methodologies and "modern developments in public choice theory" challenge the bureaucracy of public administration (Ostrom, 1983, p.1).

Currently at an experimental stage, network-based graphic design demonstrates the ability to communicate with an exciting array of visuals, which exists on the border of order and chaos, and requires an in-depth engagement and intellectual input on behalf of the public.

By experimenting with alternative methodologies graphic design can

> use the whole world to communicate, transforming it into a live stage for an information parkour and enriching our lives with emotion, motion, direction, depth, and freedom (MoMA, 2011).

In this broad context, the main responsibility of contemporary design practitioners is to recognise the potential of systematic thinking and creativity, to "produce singularity and meaning from a chaotic mass of objects, names and references that constitutes our daily life" (Bourriaud, 2002, p.17).

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