Mapping: using the tools of visualization as a critical practice
Scott Townsend

ABSTRACT

This paper examines historical precedents and suggests some tentative applications of schemas as a way of visualizing cultural differences. Schemas are critical ways of looking at 'information' in the broadest sense, exposing cultural and individual values through structure and importance. Examples may include certain kinds of maps, taxonomies of classification, stereotypes, and also narratives, especially stories that function powerfully within a culture as myth. Part one examines historical biases in map-making related to cultural beliefs. Part two looks at maps redefined as schema systems, compared with other schemas, especially studies of physiognomy. Part three is a critical application in the interactive exhibition of "Borderline Stories" at the Center for Contemporary Art, Prague. It is used as a case study for the application of schemas of information and how they may be utilized with other schemas to create an open social critique of what they represent.

INTRODUCTION

In this paper, I will examine precedents and suggest some tentative applications of schemas as a way of visualizing cultural differences. Schemas are critical ways of looking at certain kinds of 'information' in the broadest sense. What may constitute a schema can be spatial- a system of organizing traits based on their relative importance, and also time-based- the narrative that would arise from rationalizing the relationship of the traits for example. A schema is a way of exposing cultural or individual values through structure and importance in various products of culture. Examples may include certain kinds of maps, taxonomies of classification, or stories, especially stories that function powerfully within a culture as myth. Originating in the cognitive sciences, schema theories run a gamut and represent a vast subject, finding application in everything from media criticism to education. Specifically, social schemas and social representations are key. Social schemas reflect categorization based on resemblance. Social schemas can also represent typical features of similar events, provide interpretation, create expectations and help to guide future interpretations. Social schemas contain information about specific traits and also the relationships between traits. They work most fundamentally on the level of 'inference'. They resolve ambiguity, but are paradoxically self-confirming.

I) THE GLOBAL MAP AS SCHEMA

Maps are simultaneously both cultural and natural history: they are created from cultural biases, while being interpreted as truthful physical views of the world. Maps are relevant to us through the interpretation that we give to them, and yet interpretations often exceed the maker's intent. For example, the connotative side of the London Underground map visually echoes the mechanical functionality of a wiring diagram, a potential simile or metaphor for urban life. More deliberate attempts at specific narratives or interpretations may also occur through maps.

One example is the narrative and accompanying illustrations in Thomas Burnet's 'Sacred Theory of the Earth' of the late 17th century, which represents a pre-Newtonian attempt at theorizing about natural history. In Burnet's treatise, the biblical cataclysm of the Flood disrupts the geometrically perfect sphere of the original Earth (fig. 1 and 2). The contemporary geology of the world is therefore of a planet in ruins, explaining geological features such as islands, rifts, and erosion1. While this work is seen in a negative light today as creationist, non-empirical and pre-scientific, (and a neutral interpretation would at best see Burnet as a well-meaning religious mythologizer) it does illustrate the use of the map as a sequential visualization within a powerful cultural narrative of the time period. Scientific, historical, mythological, and other cultural narratives that are often in competition with each other add to the idea of a singular and empirical interpretation of data found in maps.
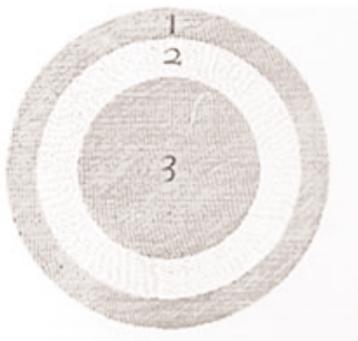
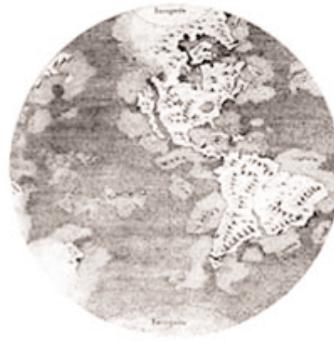

Figure 1. Burnet's primeval earth from Genesis.

Figure 2. The earth's current surface (from The Sacred Theory of the Earth).

Our expectations of empiricism and objectivity reveal another aspect: the dilemma of the map understood as a concrete physical 'truth' rather than as sign. One of the most well known dilemmas in cartography is in creating a flat rendering of a spherical globe (fig. 3). In a classic projection system like Mercator, the surface areas of the extreme northern and southern hemispheres become enlarged, since the projection must enlarge the converging longitudes of both poles into the familiar square grid of the flat map. This creates a visual distortion, which has repercussions, in terms of how we conceptualize the world and what region we are from; northern and southern extremes of the globe appear larger than equatorial landmasses. Other examples include variations on the Mercator projection which moves the equator from it's median position on a sphere to a location two-thirds of the way down the world map, thus diminishing even further the size of South America, Africa, Indonesia, Australia and New Zealand. Northern Europe and North America appear more visually dominant in relationship to many areas of the globe that have suffered the consequences of colonialism.
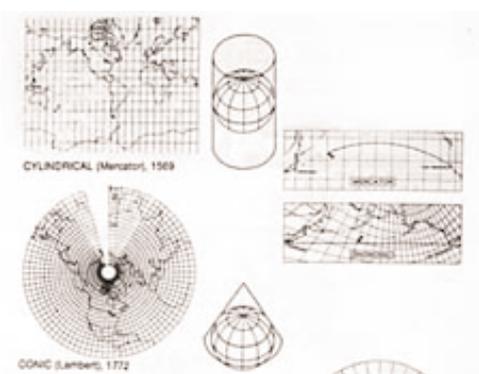

Figure 3. Map projection systems, cylindrical (Mercator), conic, planar.

Cartographers such as Arno Peters2 have critiqued this history of cartography, and have attempted to rectify or at least make explicit the act of understanding projections. In his alternative projection system, landmasses are not as clearly recognizable, yet reflect accurately their true surface area. Maps express cultural values through spatial relationships and hierarchy, literally as scientific visualization, sometimes unknowingly through projections

from spherical to flat, surreptitiously as the rhetoric of information graphics that accompany them. In this example, inadvertent connotations are attached to the 'objective' qualities of mapping in the Mercator projection system. The so-called visual 'truth' of the map becomes a subtle visual rhetoric that helps to prop up the rationale for colonialism and repression.

19 MILLION SQ.KM

30 MILLION SQ.KM

Figure 4. Comparisons between the visual size of North America and Africa in Mercator.

II) STEREOTYPES, HUMAN TYPOLOGIES AND NINETEENTH CENTURY SCIENCE

The rise of systematic and pseudo-scientific studies of human typologies in the nineteenth century in Europe and North America is yet another example of critical and historical hindsight related to the idea of a schema.

The variety of studies3 (and their application in science, criminology, and their indirect effect on immigration laws) included phrenology, comparative anatomy and 'criminal typologies'. Phrenology4 sought to explain personality traits through compartmentalizing the workings of the brain- and its visual trace in the shape of the skull. A different view was expressed in comparative anatomy, which measured the volume of the cranial cavity- and sometimes the complexity of the convolution- between individuals and racial groups. Proponents included anatomists such as Paul Broca, E.A. Spitzka, and ET all. In the late nineteenth century, Cesare Lambroso developed his theories of 'criminal types' which blatantly judged outward appearance and demeanor (fig 5). Lambroso dealt not only with outward appearance of those that society wished to exclude but also those that were embraced as geniuses.

Recalling the definition of 'schema' as a system that can be static and also time-based and related to narrative, Lambroso often combined both as a way of rationalizing the traits of his subjects. His use of classification extended not only in terms of the static comparison between physical human types, but also in the anecdotal stories of criminality and genius. Lambroso's 'system' often combined (for example) insanity and neurosis with genius, as a state of 'degeneracy'. Writing in 'The Man of Genius', Lambroso is satisfied with a Broca- like ranking system based on brain size, but it would seem only to a certain point:

'The capacity of the skull in men of genius, as is natural, (my italics) is above the average, by which it approaches what is found in insanity. (De Quatrefages noted that the greatest degree of microcephaly was found in a lunatic, the next in a man of genius.) It is certain that in Italy, Volta (1860 c.cm) Petrarch (1602 c.cm) Bordoni (1681c.cm)... all presented great cranial capacity.'

Figure 5. An example of "criminal physical typologies" in a classification system.

And later faced with contradictions in the anecdotal mode, Lambroso writes:

> 'It is curious to observe that the writers who have been most chaste in their lives are least so in their writings, and vice versa. Flaubert wrote in one of his letters, "Poor Bouilhet used to say to me, 'There never was so moral a man who loved immorality so much as you'. There is truth in that. Is it a result of my pride, or of a certain perversity?" George Sand and Sallust offer the opposite phenomena5.'

Lambroso's work established in a sense a way of pathologizing human behavior in a complex series of relationships between physical anatomy and anecdotal information, while Broca's work tended to reinforce and rationalize ethnic, racial and class divisions as natural outcomes of cranial anatomy. While the latter two were based on grouping individuals into larger wholes of taxonomic classification, phrenology was a direct and personal 'mapping', inferring innate abilities by examining the physical traits of an individual's skull.

In all three examples of 'mapping' human appearance, visual traits were used to imply a cause; literally comparative brain sizes can be ranked as an indication of intelligence, (or physical degeneracy with different outcomes for Lambroso) an arrangement of portraits groups the physical trait of a low forehead under the category of criminal behavior, etc. In general, (and even though Lambroso would dispute a 'eugenic' interpretation of his work in favor of treatment) correlation between visual information in most of these pseudo-scientific studies ended up underscoring the cultural belief in the dominance of Northern European culture and certain ethnic or physiological types over others, most blatantly in the comparative anatomy practiced by Broca6. These short historical perspectives help establish that certain kinds of 'objective' information can be linked to the creation of 'subjective' social schema.

In Difference and Pathology, Sander Gilman asserts that stereotypes are formed by subjective experiences7. The control of our fear of others motivates us to construct them. Gilman makes a distinction between temporary uses of stereotypes as coping mechanisms, (which we amend and discard when confronted with our true experiences of others) and pathological stereotypes, which are not open to change. As another writer has put it, 'we attempt to naturalize the pathological stereotype; we claim that this stereotype is universal. The healthy stereotype, then respects difference and complexities of experience, the unhealthy one denies difference, imposing itself on the world.'

The pseudo- sciences of phrenology, comparative brain anatomy and the systematic judging of outward appearance are quite literally based on stereotypes formed by subjective experiences. That these systems existed and mirrored a series of cultural beliefs at the time allowed little recourse for amending new knowledge about these 'types' as individuals. While phrenology, et all, in the nineteenth century is now discredited, the attempt to judge others through outward appearance and simplified behavior is internalized into various cultural practices such as photography, advertising, and the 'narrative schema' of various demographic models (fig. 6-7). The
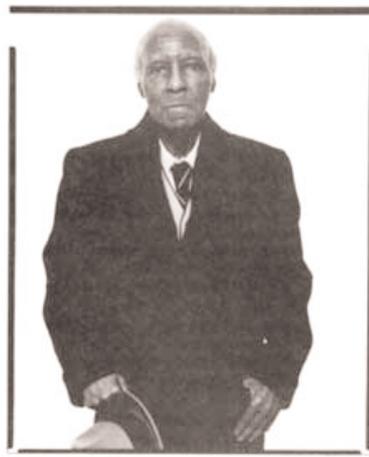
Figure 6. August Sander (photographer), 'Notary'.

Figure 7. Richard Avedon (photographer), 'A. Philip Randolph', 1976

explosive growth of photographic/videographic media and distribution through an enlarged global economy echoes the assertions of 'the attempt to naturalize the stereotype, to claim that the stereotype is universal'. The continuing development of global capital may not allow us to easily 'discard' the stereotype that visual information gives us in place of direct exchange with others. While many critics have argued that these current systems of consumerism do afford creative responses (significantly the work of John Tagg, Dick Hebdige, and others) by the audience, it is still an open question how these choices become arbitrated as global capital develops further.

III) CRITICAL APPLICATIONS

The recent exhibition of my interactive work, 'Borderline Stories', at the Center for Contemporary Art, Prague, Czech Republic, provides an example of how maps and other schemas can be utilized in critical art-making to create an open social critique of what they represent. This ongoing body of work utilizes schematic imagery (global maps and ethnic/gender/age taxonomies) to explore interpretation in the audience, and to begin an exploration of how visual interpretation and it's conundrums may be redeployed meaningfully.

Borderline Stories is about how we judge and assess others from outside a culture, starting with three texts that deal with immigration. The work is shown simultaneously on the web and as part of an installation in the gallery. The gallery-based installation includes a connection to the Internet for online input of data. Visitors to the site and gallery are asked to submit three pieces of information; the geographical region that they live in, and who best seems to represent the character(s) of the story (fig. 8-9). They also may submit a short text why they feel their character selection is justified.

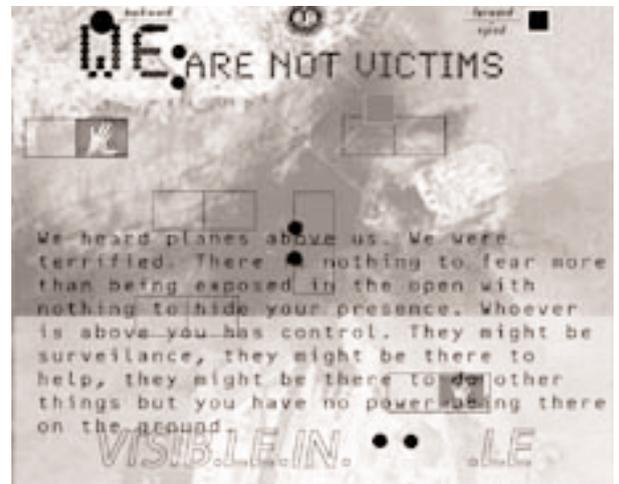Figure 8. Splash page from Borderline Stories.

Figure 9. Story three from Borderline Stories.

On a global map, eighteen landmasses change size in relationship to the online data, getting larger or smaller depending on where visitors are from. Seven stereotypes based on age, gender, and apparent ethnicity are shown from which the visitor may select what stereotype 'best' represents their interpretation of the identity of the narrator in each story (fig. 10). The predominant choice for the stereotype changes weekly, throughout the duration of the installation. As this information evolves over the course of the installation, viewers online and in the physical space may watch the evolution of the interpretations of the stories. The relationship between who appears to be dictating a particular interpretation of the character (based on the distortion of the global map to represent the users place in the world) becomes the basis for text responses articulating why the stereotype exists-as well as becoming a place to tell particular stories related to immigration (fig.11).
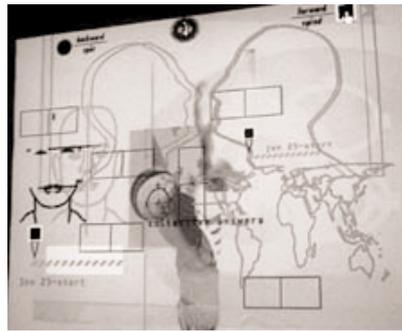
Figure 10. Selection of narrator.

Figure 11. Display of narrator and map from story three over the course of the exhibition.

The space of the gallery and the context of the World Wide Web are used to create a social and critical space which might not exist in the for-profit world of e-commerce.

The web can be more than commerce or entertainment- it is a system of distribution that can be redefined for purposes that are at times at odds with its reputation. By foregrounding the issue of interpretation of visual information and maps, the Borderline series is conceived within these critical positions:

- When different cultures come into contact, how are temporary understandings derived by the reader or user synthesizing bits and pieces of both- literal understandings and the images that are projected onto the other culture?

-How can people from different cultures create visual representations or schema that can be shared between the two cultures?
- How can the role of the maker or author be redefined within a collaborative environment where the language and history is not part of the author's identity- i.e. how is the idea of control through making redefined?

- How can meaningful anecdotes transcend cultural boundaries and allow an alternative to destructive stereotypes of others new to the community?

The work is predicated on audience response. In Prague, introductory talks were given and contacts were established in local art academies and universities. On the web, various allied NGO's in Central Europe were contacted, which ran a gamut of interests from human rights to art organizations.

Issues of distribution and availability of technology were assessed prior to the exhibition, and modification of the work was done to fit the pattern of use that the Czech audience encountered online. For example, 'web surfing' is affected by the economics of individual connections. Rather than a flat rate of use charged each month, Central Europeans are charged for the time that they are connected (which encourages, oddly enough, the economics of faster connections). This has a profound effect on how they encounter online information- there is much less patience for 'play' and more elliptical browsing of information than in the United States and Canada. Additionally, the restrictive cost of owning a home computer in the Czech Republic means that more institutional computers and network connections are utilized, either in an internet cafe, at work, or at school, where equipment is shared out of economic necessity.

In the Prague installation, it was my intention to collect responses and also to ask for additional information such as email addresses of respondents for potential follow-up contact. The intention was to have additional sections created in Borderline Stories that would bring the Czech audience 'inside' the making of the piece. I envisioned the writing and posting of additional stories related to the Czech Republic and perhaps images that were symbolically connected to the region as part of the work. Collaboration in a limited sense occurred in the translations of the stories by interested staff at the Center, and with the help of Academy students.

The expanded Borderline Series will be exhibited in September in the United States, where bilingual versions of Spanish and English will be used. 'Borderline Stories' is now a series of three separate pieces. These newer pieces (shown with 'Stories') expand on issues of how we judge others. In 'Borderline Statements' (fig 12), three stories are edited into a series of short statements based on 'subjects' (or nouns) and 'actions' (or verbs).

These statements are shown in various juxtapositions navigated through by the user/viewer. Various interpretations are suggested through the juxtapositions, which parallels mass media's inattention to specific site, place and people in the pursuit of 'story'. The user/viewer is then presented with images related to the preceding stories, and is asked to write descriptions. They are also asked where they are from and what gender they are. The collected information is displayed starting with what the current user has just submitted. A portrait is made combining a silhouetted outline of the country the user has chosen, along with a list of what the user has provided as objective descriptions. The user is led to believe that the statements that they have provided are actually a kind of portrait of themselves. Other user/viewer's identity choices, which combine their statements with 'map-as-portrait', suggests a kind of virtual conversation of each person's interpretations, or fears, based on identifying the speaker of the original writings.
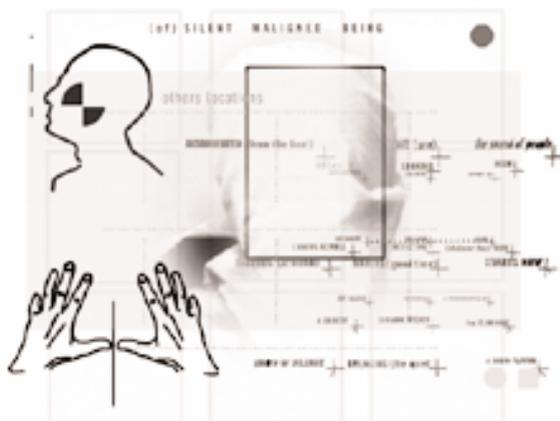

Figure 12. Splash page from Borderline Statements.

'Borderline Translations' underscores the narrative elements of the first two pieces. It operates as a 'language lesson' (fig 13-14), where North, South and Central American countries are shown in juxtaposition with physiognomic traits of individuals and spoken text, equating the practices of judging persons based on apparent ethnicity based on the translation that we hear. It also functions as a series of links to bibliographic sources on the history of this practice. In the new iteration of the work, flexibility and improvisation in response to 'language specialist' collaborators and the information collected could again change the dynamic of the piece. Possibilities exist for direct collaborators to work on/in site adding images- consult on structure, etc. originating with their 'expert status' related to Latino culture, language and history.
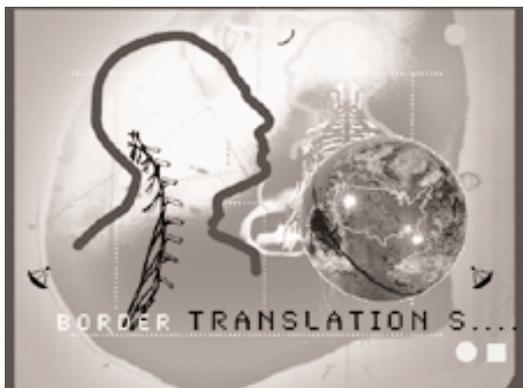

Figure 13. Screen shot from Borderline Translations. (13brdr.jpg)   Figure 14. Screen shot from Borderline Translations.

SCHEMA AS AN OPEN SYSTEM OF INDIVIDUAL IDENTITIES

The meaningful structure of map, taxonomy, classification, categorization, and the structure of narrative can never be completely free of subjectivity. Subjectivity is completely bound within interpretation and the audience. Visual information is highly political and subjective, because of its very use. Again, from a historical perspective, the two examples from the beginning of this paper:

Lambroso inferred relationships between physical characteristics of human variation to create a schema that reflected the values of his culture. Once having made a taxonomy, he theorized further from the narratives that were recorded of his subjects. We now can look at the work on two levels; we dispute his interpretations, but see his work in a larger sense as an indication of what part of his culture believed in: the concept of Social Darwinism, psychology as the treatment of illness and mental illness as organic in nature.

Burnet created an unfolding schema of the earth, a progressive taxonomy of development connected to the explication of the Old Testament. He, too, sought a consonance between what he observed and what he endorsed as 'legitimate' knowledge within his culture. Again, we find his proof in opposition to our science, but his work can be viewed as part of a trend that led to the methodological observation of phenomena. We can again see his work as a kind of larger historical/ cultural 'text', an indication of the transition between the values of theology and the emergence of more empirically based concepts of the world.

The second critical interpretation is possible because of history; a re-opening of the closed schema of Lambroso's and Burnet's systems in hindsight. Mass distribution of information may be used to create a new focus of critical interpretation, of exposing existing schemas in the present.

Borderline stories attempts to expose 'knowledge' in part of a heterogeneous global audience. In some ways it parallels the historical examples of Lambroso, of individual identification with a group tied to anecdotal knowledge. What is fundamentally different is that knowledge exposed on the website is inherently in conflict with itself, while still providing a place for the user to participate and relate information without critical cynicism. Rather than the conflict of interpretation of data as a source of 'semantic noise', the act of interpretation becomes the primary involvement, and rather than merely multiplying viewpoints for the sake of abstract diversity, it becomes a negotiation between first person narrative and the actions of the group. The use of information in this example may be used critically in the present rather than waiting for the parallax of time and history to allow a re-assessment outside of the values that helped underpin it.

The ability to place the audience responses back into the distribution system that the interactive piece utilizes, to 'perform or speak' rather than escape into the voyeuristic world of images of most cyberspace, is essential. Eliminating the final idea of a goal, of a final 'receiver' or a final empirical bit of 'truth, allows us to inspect and participate in the information as a 'site' rather than as the design as a transparent vessel only of content; as a schema of values held by the inquirers, firmly enmeshed within their place in their culture based on status, class, and the larger narratives and schema of their group.

The narratives that are created arbitrate the differences- identity becomes a question of how, finally, the viewer affiliates his- or her-self with the incongruities of the information: 'does the information speak for me? Am I a part of this map and what it represents both as a location and as a symbol?' In so doing, personal identity is shared through social deliberation in the gallery and on the web: a dynamic activity. This is in complete contrast to the economically created identities based on building profiles of consumer choices within demographics. There is no social space within demographics and it's application; rather, a series of passive choices which separates the audience from any community and controls discourse. The Borderline series, therefore, is an idea of assemblage

(see my article 'Unfolding the Surface of Information' Design Issues Volume 14, Number 3), externalizing how we understand the world.   At least some of our cultural values become a visual taxonomy that can be shared meaningfully with others.

Returning to Sander Gilman, when 'we attempt to naturalize (the) stereotype; we claim that this stereotype is universal', eerily suggests our belief in the universal qualities of objective visual information without context. The Borderline series as an ongoing project attempts to develop difference and complexities of experience, where the road traveled on the map critiques the quick assumptions of how we map the world to fit our own image.

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BIOGRAPHY

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