VISIBLE LANGUAGE 43.1

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VISUAL CULTURE AND VISUAL COMMUNICATIONS IN THE CONTEXT OF GLOBALIZATION

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ABSTRACT

The fact that groups of people reflect different cultural traditions and economic and social backgrounds should begin to challenge the myth of universality of human experience and the social relationships, cultures and values that emerge from it. An intercultural communication process, developed to foster and support a positive approach to globalization would foster sensitivity and care between peoples in a potent, reciprocal process.

Each culture creates its own universe of symbolic meaning that structures and shapes the perception of reality which members of a specific clan or society experience. It is already a yeoman's task to decipher the complex web of interactions between anthropological, sociological, historical and cultural forces. This becomes exponentially exacerbated in multicultural communication and intercultural discourse. Modernist approaches to communication design do not support intercultural communication as they ignore the culture-destructive forces of globalization, by infiltrating and eliminating languages, removing customs and ceremonies, changing indigenous cultural values and social relationships and forms of expression. This article critically examines the limitations of communication design as currently taught and practiced.

VISUAL CULTURE

IT'S NOT WHAT ONE WANTS TO MAKE IT; IT IS WHAT IT IS

Linguistic globalization has existed as long as missionaries of powerful religions and emissaries of dominant governments have brought their social and cultural beliefs to others and tried to persuade them to abandon the particularities of and commitment to their own culture and transfer them to the virtues of another, or when it was in the interests of all parties to avoid conflict. Each culture has developed concepts of truth, value and merit, power and taboo. These socially constructed beliefs are honed, refined and sharpened, evolving over the culture's existence and are embedded in everything that the culture needs to maintain its inner equilibrium, establish its identity and present itself to other cultures. When in the intercultural exchange, messages do not tightly fit within the framework of indigenous value systems, the exchange is not only one-sided, but also not mutually beneficial; it is destructive.

Traditionally, verbal and textual communication have been recognized for their elaborate intricateness and complexity, even more so within intercultural communication activities, especially since most languages behave as closed systems, depending on indigenous cultural roots in religious and philosophical thought, technical evolution, specific potentialities facilitated by emancipation, quality of dependencies, interdependencies, independence from leadership, etc. Communication science primarily explores the dependencies on spoken and written languages, and the problems between oral and document dependent traditions. At court, oral and written testimony obtained from witnesses is notarized and forms the basis for initial declarations of fact around which truth is negotiated and established. When it comes to signed treaties, they are as dependable as the ethics of a culture is to its self-image in relation to another. In many parts of the world a contract is still sealed with a handshake, signaling the integrity of parties. Although visual or pictorial testimony is allowed, most is restricted to scientific presentations of facts. Because of western dependencies on textual contracts at court, within government and most academic institutions, understanding information processing within images (seeing, reading and interpreting) has been grossly neglected.

'Globalization,' the amalgam of interactions of a complex group of social phenomena that evolve in particular social contexts and settings, is assigned a very cursory and opaque nomenclature. This veils the magnitude of negative impact on small and fragile cultures, namely the greater unilateral gain of control by powerful cultures, and an unfortunate change in cultural characteristics from diversity to sameness. The quality of globalization depends on sensitive human dialogue and exchange, attached to specific areas of discourse like intercultural diplomacy, sophisticated forms of multilateral barter in commerce and economic negotiations, as well as the exchange of cultural goods embedded in artistic and ritual objects as well as ideas. In view of the steady decline in the use or complete erasure of indigenous languages, and the additional repercussions of the threat of impending loss of indigenous cultural legacies demonstrated by customs, rites and histories, it is urgent to review the present state of visual communication, specifically the quality of image and icon encoding, and the development of the necessary skills to aid intercultural communication.

The heritage of 'Modernism' and 'International styling' did not prepare visual communication designers well enough for the looming problems of globalization. When communication images, standing alone or in groups, or supporting text messages are constructed on the basis of limited cultural understanding there are great opportunities for breakdowns in the quality of discourse. Worse, insensitivity may create dangerous confrontations. Present-day education in visual communication design is still a very narrow pidgin language, mired in hundred-year old principles of formal construction, which even in their heyday did not deal with psychological, social and cultural communication factors, and therefore were far removed from successful intercultural communication. It was about primacy, compression of complexity, elimination of cultural distinctions and imposition of central European values – unfortunately – on cultures with long indigenous histories of visual expression. This needs to change.

PREAMBLE

A couple or more years ago, at a colloquium dealing with electronic global communication and visual culture, Donna Cox was at that time a colleague and senior graphic design professor at the School of Art and Design of the University of Illinois at Urbana-Champaign. Cox studied electronic art before it entered the academic course menu as a subject, and had achieved the highest academic rank not through artistic experimentation, i.e., not through studio trial and error in the arts or in communication design or aesthetic theory, but as an outstanding visual programmer of scientific data for the National Center for Super-Computing Applications. She presented some very aesthetically interesting images. They were data-driven, using only fragments of the expressive classical visual vocabulary. Limited to the representation of specific data, they were very predictable. Although quite beautiful, they were not emotionally charged communication images. They were synthetic, scientific visualizations of data about arrangements of planets for planetariums, simulations of hurricanes or Internet webs, correlating the technical data gathered by various satellite probes and computers.

A vigorous debate ensued.

THE BONE

OF CONTENTION

Donna Cox suggested that her images could be magically metamorphosed from science into art, even into visual poetry, through the mere trick of giving her purely technical and scientific visualizations provocative Duchampian titles, and in that way move them instantaneously from their cool scientific context of logic into the emotive realm of art.

In opposition, a question was posed: if a communication-image bound to a specific context is moved from one context (science) to another (art), will it retain its value? For communication designers the question expanded into the problems of visual literacy in the service of globalization, as well as into the global failure of Internationalist and Modernist visual communication.

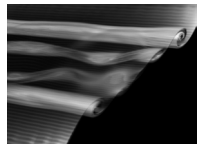
Figures 1A and 1B
Visualization of large-scale three-dimensional swirling strength, indicating speed of local fluid rotation in gravity current simulations. Image by David Bock of the (NCSA) National Center for Supercomputing Applications with simulation by M. Garcia, M. Cantero, University of Illinois and S. Balachandar, University of Florida, reproduced with permission.

Figures 2A, B, C, D and E
Visualization of a binary neutron star collision simulation using a variety of data representation techniques. Density is represented as a volume (surrounding cloud region in Bock 2.a image), transparent surfaces representing the boundary region between low and high density values, and as slice planes through the middle of the volume. Image by David Bock of the (NCSA) National Center for Supercomputing Applications, with simulation by A. Calder, E. Wang, and D. Swesty (formerly of NCSA), reproduced with permission.

Figures 3A, B and C
Visualization of the simulation of the formation of a galaxy. Image by David Bock of the (NCSA) National Center for Supercomputing Applications with simulation by M. Norman, G. Bryan (formerly of NCSA), reproduced with permission.

Figure 4
Visualization of rainwater distribution in an evolving thunderstorm simulation (the rainwater is represented as a volumetric region varying in intensity from dark to light).
Image by David Bock of the (NCSA) National Center for Supercomputing Applications with simulation by R. Wilhelmson of NCSA, reproduced with permission.

Figure 5a, b, c and d
Frames from an animation visualizing the development of a simulated hurricane in the Gulf of Mexico .Image by David Bock of the (NCSA) National Center for Supercomputing Applications with simulation by R. Wilhelmson of NCSA, reproduced with permission.



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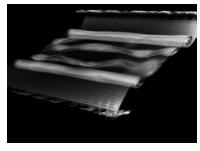

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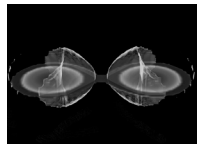

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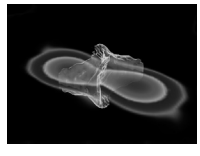

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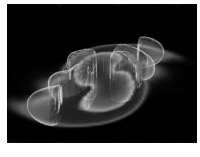

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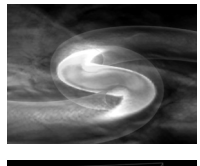

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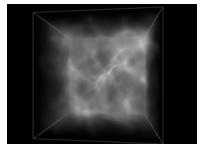

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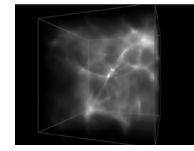

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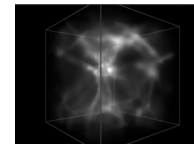

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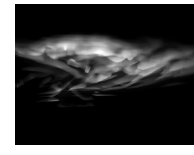

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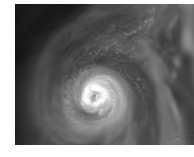

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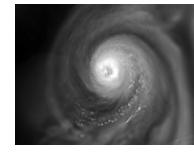

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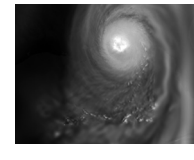

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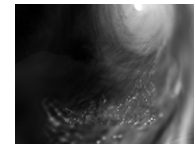


5D

SCIENTIFIC

VISUALIZATION

'Scientific visualization' refers to any traditional technique, applied for information explication through graphics in maps, charts, graphs or diagrams, used before the evolution of fast, high-performance computers and other contemporary digital techniques. Donna Cox uses digital graphic animation and immersive techniques for constructing virtual realities or simulations of natural processes, transforming data into visual presentations. She uses accepted, well-understood and reproducible processes. Her work's characteristics depend on using computer graphic techniques to explore results from numerical analyses with the purpose to extract scientific meaning from complex, mostly multi-dimensional sets of data. In her work, visualization is directly connected to understanding the features and trends represented in the large data sets encountered in the gathering and analysis of data, which is then simulated with high-performance computers. The impetus and momentum for her work depends on three conditions: 1) scientific, and therefore dense, 2) researched and verified information and 3) a professional scientific audience interested in furthering the understanding of phenomena. The public as an audience experiences the data presentations as a windfall at cursory educational and public relation levels.

Computer simulation is as complex as necessity requires for a single or a network of computers to provide, instantaneously or over long periods of time, insight into dynamic operations and behaviors of specific systems and their subsystems, whether abstract or natural, observed or invented/conceptualized. The fairly new discipline of computer simulation has stepped into the shoes of traditionally abstract, mathematical modeling of complex systems found in the physical, biological and social sciences and various related technologies.

A COMPARISON:

DONNA COX AND RON HAYS – SCIENCE AND ART

There is nothing wrong with Cox taking a stance opposing traditional art in her work, as all artists must, to understand, evolve tools and methods with contemporary technologies and to inevitably mature with them. But there are differences between science and art.

In the early 1970s, at the WGBH Educational Foundation, Boston, the New Television Workshop under the direction of Fred Barzyk was supporting the development and creation of experimental video art. The initial motivation came from, among others, Ron Hays, a very ambitious electronic experimenter who connected synthetic images to the music of Richard Wagner's *Tristan and Isolde*. He worked with a synthesizer developed for video and performance artist Nam June Paik by Shuya Ab, Paik's video engineer. Ron Hays catalogued the various feedback patterns from the oscilloscope into a cohesive as well as expressive visual vocabulary from which he chose the elements to construct qualities and personalities for electronic doppelgangers constituting his visual interpretation of the opera. (Unfortunately, there are no images available, as the technology of that time has vanished.)

However, the differences between Cox and Hays are substantial. Artists control the total creative process from beginning to end. Many visual results of scientific research are aesthetically intriguing, like Harold Edgerton's Milk-drop image, or Benoît B. Mandelbrot's fractal sets, but they are not art. Even Edgerton would always make clear that he considered himself not a fine-arts photographer but a scientist. In Cox's projects, the data and the visualization of the data are there for purely scientific purposes, not for artistic expression. Scientific researchers, specializing in the various academic disciplines, generated the data for her work. She depended on those who developed and synthesized the data to form the outline for the specific function of visualization to allow for understanding of processes, and those who developed the programs to visualize the data. Also, many of the time-consuming visualization processes depended on other members of the visualization team. If other researchers would take the same data sets for visualization and filter them through the same specific visualization processes, the results would be more or less identical.

THE DIFFERENCES

IN CONTEXT BETWEEN SCIENCE, ART AND COMMUNICATION DESIGN

But there is a distinct difference between scientific visualization and artistic expression; the efforts of science contributed over centuries to a reservoir of true statements about the world for the purpose of human physical survival; it fulfilled the needs for knowledge about phenomena. Meanwhile art contributed to the social and cultural mythology of society, massaging nonscientific truths embedded in personal, social and cultural values through filters of vision, philosophy and worldview, in which the aesthetic experience became a cultural catharsis, a spiritual release brought about by the best objects of art. Meanwhile, in the context of globalization, communication design diplomatically negotiates between one or more cultural languages. *Negotiation as such is not a requirement in science or art.*

It is true that contemporary art can be characterized by the fact that there is no clearly defined common ground, and therefore a wide range of modes can be and are delivered by artists. But art has never been about technology itself even during the time of Futurism when artists, architects and thinkers embraced technology to make statements about the unfolding world. Art has always been about object/image/performance-encapsulated concepts that function to emancipate the human spirit, or advise, lead or warn. Sure, artists are still concerned with visual perception, visual languages and visual literacy, traditional and contemporary technologies, tools and methods, but they are much more concerned with dealing with how social sensibilities are expanded and refined. Producing works of art or designing for intercultural communication is clearly quite different from Donna Cox' contributions to the scientific understanding of the universe. Even under the most liberal aesthetic conditions, her design of one of the first diagrams about the universal connectedness provided by the Internet does not frame an artistic statement. To accept her thesis confuses the process of isolating and mapping cool statistics with creating emotionally sensitive statements in the service of cultural communication. Not every intellectual makes a Duchamp. Artists struggle for decades to define the purpose and content of their work. Therefore it is hard to accept the concept that all work, scientific or artistic, is interchangeable at the flip of nomenclature.

Like the work of her colleagues, who simulate as accurately as possible, the dynamics of tsunamis and hurricanes, the effects of soil erosion after flood damage, or forest damage through insect infestation, the process is so closed and well defined, that no matter who the persons appointed to the task of organizing the visualizations, whether computer visualizer or scientific illustrator, they would to a very large extent be constrained by the material provided by the data banks and the conventions through which digital media accumulates information and offers ways to describe location, motion or depth.

In the scientific visualization of the stellar systems, unlike in poetic and metaphoric expressions, the concept of the universe has to be frozen and linked to the early visualization skills of Nicolaus Copernicus, Johannes Kepler, Galileo Galilei and other astronomers. Variable expressions are no longer welcome as they have to fit a hardened scientific vision and definition of the universe, its arrangements and complex and

highly precise structured interrelationships. No longer is there room for interpretation, imagination or poetry. Instead, plentiful space is opened by dazzling technology to model movement of objects in time rather than through a retrospective two-dimensional Gutenberg legacy.

Did Marcel Duchamp spin in his grave? May be. Projecting his intelligence forward by a hundred years, he would have hoped for art to be something much smarter by now than a mere nomenclature change. He had hoped for art to be culture building and mind challenging, definitely not for fulfilling the needs of cheap public relation vulgarities. At the same time the slight-of-hand cleverness of Cox made it urgently obvious that if visual communication design, in relation to art and technology, wants to accomplish its true mission of communication, namely to facilitate negotiations between culturally diverse social groups, it cannot allow itself to become haphazard or cavalier in dealing with social complexity bound by dual or multi-polar contexts. It can't be metaphorically stimulating or specific for one communication participant, while flat or casual for another.

REVISITING

THE TOWER OF BABEL

This colloquium at the University of Illinois, mentioned initially at the beginning of this paper, brought together a very diverse group of academic experts, each with a very specific stake in the discussion grounded in computer science or software engineering, robotics, linguistics, museum curation, art and communication design, among other disciplines. A multi-polar discourse ensued about what could or would be culturally more important, art or design, design styling or communication design, visual poetry or science. No matter how loud, energetic or chest thumping and posturing it became, or how it tried to justify or denigrate Cox's latest cavalier Duchampian interpretation, discussions turned harshly territorial and became from the standpoint of communication irrelevant.

All arguments avoided dealing with the true reality of 'visual communication,' namely that its degree of functionality, even in a single culture, is exceedingly complex, and bound to a myriad of specific needs, contexts and contents. These inadvertently will enter even more heightened stages of complexification in the context of coping with globalization. Most of the ideologists also forgot that communication relates to human biology and behavior, qualities of physical environments and the bias and value systems that emerge from cultural evolution and successful survival over time. It seemed useless to talk about 'visual culture' without considering a wider taxonomy of 'visual language,' including the audience (reader/viewer/user/thinker/decision-maker/citizen) shaped by culture and civilization.

Instead the discourse continued to look at the homeostatic traditions of object and image-makers, and the institutions that support them: publishing houses, museums, libraries, universities, art and design schools. The new groups of scientists charged with defining the complexification of invisible dynamics of interactions, those things that can't be directly seen by the eye – too atomic, molecular, too far away or gigantic and processes that must be described in object and image metaphors so that non-scientists can grasp and understand the concepts behind the discoveries – were also considered.

There was at least one benefit in this freewheeling discourse, even if just for that specific moment, it had to open up and let 'scientific visualization' in as one relevant part of 'visual language' and 'culture.'

VISUAL CULTURE:

IT'S NOT ABOUT HOW ONE CAN MANIPULATE IT;IT IS WHAT IT IS

Unfortunately, Cox's simplistic approach shifted the discussion away from pressing the fact that the scope of 'visual language' or 'visual communication' is much larger than the domains of art, design or science. It seemed unfortunate to just call attention to mind bending Dadaist axioms or one-directional principles of communication, using a professional jargon, that artists and designers use in conversation among themselves. The user-public can no longer be ignored. A true investigation of 'visual language,' therefore 'visual culture,' must be equally concerned with the sociology and psychology that surround audiences and users, and their preference for and ability to see/read, interpret, comprehend and retain information. Most importantly, to understand how they respond to and use images and objects in their daily life experiences, and how these go through dynamic changes during their application and use, vacillating from functional to nostalgic to symbolic.

Visual language cannot be separated from culture, as everything is connected and interwoven with culture. How do we understand the dynamics of a form, a concept or an idea? When is it aggressive or benign, passive or malignant? Can the Bauhaus or Constructivist languages of form and shape, or the dynamism of composition be truly understood and even felt, unless they can be paralleled with physical and emotional human experience? Visual language has aggregated and accrued over eons, a recorded and organized compendium of visual signal configurations to build a sturdy, somewhat dependable and useful language reservoir.

One also cannot separate present-day human experience from factors such as stages of human evolution or behavior in relationship to environments. Sophistication and emancipation through education or the dependence and independence of humans from the control of economies, as well as the cultural, social traditions of community need to be understood. In the same way, 'visual literacy' cannot be isolated or separated from any of the other languages or literacies. 'Visual literacy' is just one subset, making up the amalgam of aural, oral, tactile, spatial, verbal, written, social, behavioral, cultural, ethnic and other cultural sensory survival literacies. 'Visual literacy' is neither more nor less important. It is just one of the communication devices biology has evolved in the species over millennia.

ALL COMMUNICATION

IS ACTIVE DIPLOMACY IN CONFLICT RESOLUTION

All communication, in many ways, deals with negotiation for conflict resolution, especially if the initiator of the message and the receiver inhabit different psychological, behavioral, educational, economic, social, political/ideological, religious or cultural environments. Philosopher Hans Georg Gadamer (Gadamer, Weinsheimer, Marshall, 2005) believed that a fusion between two or more horizons is always necessary to aid in any communication process.

In "Le Ton Beau De Marot: In Praise of the Music of Language" (Hofstadter, 1998), Douglas Hofstadter explored the difficulties of translating poetry from one language to another, and not just because of rhyming difficulties. His explorations go deeper than simply translating between factual encyclopedic languages, including between cultural and social frames of reference, i.e., vernaculars of languages, modes of expression, puns, hierarchical and social etiquette, class, caste, culture, references and self-references, structure and function and artificial intelligence.

Hofstadter also reflected on his translations of *Gödel, Escher,* and Bach (Hofstadter, 1998) into a variety of languages, whose process led him organically to the translation of poetry. He termed translation of poetic material an "art of compromise," when too general or simply a word-by-word translation in contrast to *"poetic lie-sense,"* when trying to reflect the context and the contents of the poem in the culture and experience of the speaker of the language. For him, any translation/interpretation results in a lie; he claims no dictionary word is perfect and no sentence can capture all of the truth embedded in the original. In poetry, he hoped that a work is translated or *"poetic lie-sense"* is taken with grace and care, getting the overall 'sense' and the overall 'tone' of a line across, doing so with an elegant rhythm and a high-quality rhyme. Rhyme, sense, and tone do matter. Throwing any of them overboard would be destroying the quality of the poem.

DECIPHERING

A CULTURE

Translating

Properly translating requires knowledge of a culture's intricate interrelationships between anthropological and sociological aspects, its language and behavior, the roots and make up of its values that create identity and cultural distinction. Yet even further, sensitive skills of conversion of vast cultural information into the conventions of another culture in an easily understandable form that avoids distortion, is necessary (Hall, 1973, 1976, 1984, 1990). Communication design tries to explain the meaning of sentiments and conditions through a purely visual vocabulary of stance, gesture and gaze, as well as perspective (provided by the image author's position: looking up, down, through; panning, zooming in/out; and the selection of contrasts, light/dark, harsh/fine textures, passive/dynamic motion, sensitive/coarse color; etc.) to fortify understanding with text. The problem is that most visual communication designers know little or nothing about the use of images and icons in other cultures.

Interpreting

Moving a concept from one culture to another and establishing significant meaning and understanding may require a complete change of conditions, through the selection of analogical metaphors that position the concept more closely to the other culture's value scale and help bridge the sometimes enormous cultural gaps and ideological gulfs.

Invisible barriers, invisible incentives

Cultural differences establish invisible barriers in the process of decoding inter-cultural information. But it would be wrong to assume that pictures cannot produce limited cues about a reality. However, it cannot be assured that these cues are universally read, interpreted and understood.

As with all gestalt-related aspects, gregarious members of a culture will not be held back from trying to connect sets of nearly incomprehensible clues. Their skills are feisty and survival oriented. Through trial and error they advance their understanding and ability to follow and massage components into a cohesive whole - correctly or in error, i.e., at the end of WWII, formerly untouched cultures were shocked into contact with technologically sophisticated cultures (Mead, 1966; Lindstrom, 1993). In Melanesia, the tribes maintained that spirits of their ancestors had manufactured cargo-goods intended for the local indigenous tribal descendants. To attract the flying cargo-planes from overhead, tribal members built wooden plane decoys in the hope to lure one to land. They imagined a Christ-like missionary figure would alight, carrying a refrigerator or sewing machine. For another example, consider the seemingly impossible to solve puzzles like mathematician Erno Rubik's 'magic cube.' Even though absent of explicit rules, it provides entertainment and intellectual challenge as well as intuitive stimuli. For more reluctant, protective traditionalists and conservatives, the task becomes daunting. For the intimidated and frightened, the complexity becomes a negative challenge – threatening – incomprehensible and chaotic.

The easiest way to generate understanding through images is when they pertain to very common and logical realities. Unless there is a balance between challenge and skill (Csikszentmihalyi and Robinson, 1990), Mihalyi Csikszentmihalyi and Rick Robinson claim that in visual communication "a certain amount of visual discrimination seems to be indispensable ... and that a person with only rudimentary perceptual skills, namely one who has never exercised visual discrimination . . . will be unable to derive an aesthetic experience from any but the most simple forms." Because one cultural reality differs significantly from another, even if some realistic images have a chance to be read analogically, they challenge the Modernist credo that conventions of pictorial representations are easily shared and understood cross-culturally. But even then, to be efficient in communicating, the images must hold many of the cues through which persons connect their physical, emotional and cultural realities to the conventions.

The photographer Lewis Hine argued that most viewers/audiences believe that the camera creates a specific relational reality made up of environmental interrelationships between objects, landscapes and people. They believe that photographs are not artificially staged events or manipulations of reality. In his understanding the image must have all of the convincing aspects of presenting reality, but although things resemble objective reality, pictures nevertheless are not replications of reality. Their subjective nature is a filtered view through the author's perceptual frame.

The reading of metamorphic or symbolic images and specific styling is the arena with the most difficulties. Metaphors are language based, frequently colloquially linked and are not shared in the form of puns, fables or literary narratives (i.e., "it's raining cats and dogs"; "eating a hot dog," etc.). Symbols find their roots in mythology and frequently do not transfer easily from a western culture to another. A big culprit is 'graphic styling.' In styling, the selection and expression through 'cool' visual form, often masks a precariously slim content as well as narrow ideological implications.

GRAPHIC

STYLING

In communication design, each designer's individual ideological persuasion – populism, minimalism, surrealism or beat, hippy, punk or hip-hop – decides the choice of visual vocabulary and forms of expression. Styles are arbitrarily selected. They are short-lived. For example, in magazine design, there seems to be a five to seven-year cycle in which a magazine's styling has to be changed. In other areas the cycles can be much shorter or longer, depending on market conditions. Styles are usually disconnected from contents and contexts. Worse, they are totally disconnected from culture. During the thirties, the industrial designer Raymond Loewy introduced styling to the various transportation and automotive industries. His designs did improve the exterior looks but did not improve performance or function; neither did General Motors' design chief, Harley Earl, who introduced arbitrary fins on Cadillacs as early as 1948. Styles are superimpositions of new identities on common, fading or aging endeavors. Although very rare now, sometimes styles are inspired at significant moments in time when all creative ventures (in architecture, industrial design, the visual arts, literature and music) share an overarching worldview.

The social significance of style lies in its rarity or newness. Its exclusivity must stand out from other distinct styles adopted by other competitive entities. The rarity of a style creates its own territoriality, and if it is accepted by a significantly high position group in the social hierarchy, it creates the group's exclusive identity. Styles in many ways signal social and cultural territories. Visual communication styles relate much more to the prevailing, fashionable visual expression of the day. Since style is no longer bound to cultural conventions other than marketing, styles have to be simple, easily learned; therefore they are strongly promoted by the media. Especially in globalization, style seems to be a barrier rather than a facilitator, as there are few cultural bridges that are bound by custom and tradition.

VISUAL

CONVENTIONS

Visual conventions behave very much like the conventions of all living languages; they are dynamic. The narrow familiarity through an art/design education for image-makers with conventions frozen in present-day modishness in no way assures ease or cognition regarding the reader/audience's ability to interpret the contents or context of an image. As always has been true, the quality of meaning emerges from the reader's sophistication, experience and contextual knowledge. For the public, visual literacy comes as an afterthought. It is not clear that greater education would increase the ability to read the signals and signs. The function of the viewer/audience's visual acuity has little to do with intuitively absorbing and reacting to visual clues. Instead of a cognitively critical viewing process, it has rather to do with flight/fight instinctive reactions and immediate physical ramifications.

It is also interesting to point out that the environmental conditions of the surrounding landscape foster an instinctive understanding of concepts like 'upright' and relationships of objects in relationship to light. Observing conventional art and design students viewing abstract painted images, one finds they frequently read the cues in the image and then turn a painting until it matches the original north-south position in which it was painted. Eskimos behave differently, inhabiting a much more horizontal and elliptical environment, bounded by unlimited vastness and lack of verticality. They read images positioned without reference to north-south with ease. Judith Kleinfeld (Kleinfeld, 1991) points to the fact that ecological and cultural characteristics of Eskimo society lead to significantly higher levels of visual memory. A test of visual memory was given to 501 Caucasian (urban) and 125 Eskimo (village) children. Village Eskimo children demonstrated significantly higher levels of visual memory. Visual memory was also found to increase significantly with age. Up to sixty-five percent of teachers in Eskimo villages noted the unusually high ability of Eskimo students in recalling visual detail or mentioned their high performance in tasks depending partly upon this ability.

Eskimo space is a smoothly experienced continuum (Mihalcheon, 2005), flexible and unpredictable. It is directional rather than dimensional or metric. There is no need for a single symbolic image or for ownership of the terrain – no need for planting markers and flags. The Eskimo has always accepted the coefficient and reciprocal qualities of his surroundings, required by his nomadic methods of attaining food along with constantly shifting conditions (species, migrations, seasons, weather conditions). The Eskimo embraces his environment and works within nature as a synergetic component in a highly sensitive total organism, not like a western controller or strategist. He is at ease with the dynamism of the terrain confronting him.

In contrast, perception of western space is not haptic or real, tactile or natural. Space is reduced into an abstract abbreviation of a diagram. It is striated, showing the seats of power or points of origination. It is a proportionally grided system of metric references to calculate and pre-determine distances for consistency and dependability. Concerned and preoccupied by striated space and dependent on distance vision, as well as horizons, the westerner is uncomfortable reading Eskimo images in which animals seem to float, without land under feet and hoofs, because the ground constantly changes direction, and as different viewpoints shift, the body has to move in time and space, coming to rest upside down. The Eskimo is unconcerned with horizons, for he represents thoughts and entities in free relation to one another, rather than as opposed to a striated and pre-defined contextual setting of horizontals and verticals.

CULTURAL

STAKEHOLDERS

Goodwin Watson (Watson, 1974) suggests that in all social systems, stakeholders of social, political or economic investment become gatekeepers with serious intellectual interests and commitments to maintaining the culture in its established configurations. They will make all effort to protect against any intrusion or alteration, positive or negative. Stakeholders prefer to maintain the balance between all forces, unless there is a proportionally greater promise of benefit. The various rationales of the stakeholders' vested interests construct the conceptual territorial line in the sand, their first line of defense: homeostasis, habit, primacy, selective perception, dependence, superego, insecurity and regression; and their social and cultural system's corollaries: conformity to norms, systemic and cultural coherence, vested interests, the sacrosanct/shibboleth and automatic rejection of outsiders and their views.

Watson points to cultural norms, which create measures of loyalty, evolve outlines for conduct that invite or prohibit participation, condemn and weed out any deviance. He explains that through an organic resistance, even miniscule parts take on the resistance of the whole. Changing a part is perceived as an attack on the whole. He also discusses that every culture clings to something revered, that lives in a void, is metaphorically dynamic and not clearly defined, but is considered untouchable, beyond the reach of reason.

It is much easier for most to accept E. O. Wilson's study of the biological basis for all social behavior when it is applied specifically to his insect research subjects, but leaves the implications for human ecology in doubt, when he introduces the analogy that human behavior is the product of heredity, environment and the sum of past experiences. Because of human idealism, his argument that 'free will' is just an erroneous conceptual illusion is hard for most Americans to accept (Wilson, 1979, 2000).

Sociologists are able to identify the positive moral incentives cultures provide, which are considered by the majority of members in their particular choices for the greater benefit, evolution and survival of a culture, while maintaining it now and in preparation for the future. Preservation of traditional values and history or condemnations of amoral or unethical behavior are important, when failure to act occurs in certain culture-destructive ways, these also may qualify as moral incentives. Moral incentives build cultural self-esteem, communal approval and social admiration. Rejection of moral incentives usually results in condemnation or ostracism of individuals or groups. Positive moral incentives are grounded in cultural altruism. Advantageous, beneficial and gainful incentives are offered when a culture and its members, in an exchange, can expect certain rewards for changing traditions and adopting new social, economic and political worldviews. When less powerful cultures are forced by powerful, assertive and domineering cultures into a discourse, the incentives offered are usually coercive, rooted in loss, pain, alienation, embargo, punishment or loss of social status and ideological territory.

Even altruism activates a dynamic quest for proxemic incentives, responding to ever-shifting requirements of human needs for expansion of physical, emotional and ideological territories in which even Mother Theresa was a keen competitor. Who could have given more away than she? She owned nothing, but shared everything.

SOCIAL

CAPITAL

The term 'social capital' describes an intercultural aggregate of social skills owned, practiced and appreciated by individuals; there are social units in a system of intercultural connections that engender social obligations, like fostering cooperative relationships that facilitate collective resolution of problems. Although social capital is understood as an economic definition, in reality it represents a spectrum of psychological and cultural factors and functions, all of which share a focus on a culture of trust and tolerance and the ability of people to work together for common purposes.

The discussion of social capital is nothing new. It has roots in Adam Smith's "The Theory of Moral Sentiments," 1759, and has been explored through Emil Dürkheim's normative sociological explorations of tangible characteristics (Nisbet, 1974) that promise high returns on people's quality of life, built on good will, fellowship, sympathy and social intercourse among individuals and institutions that make up the social units of a culture. Nearly all cultural positivists have shown empathies for the promotion of social capital, including Marx (Von Mises, 1936) Weber, (Baehr, Wells, 2002).

The wealth of humanity is not fiscal. It lies in the shared cultural aggregate of intellectual and physical artifacts, as well as the classification and recording of the historic evolution of skills and insights embedded in them. Specifically, the value lies in language and in the descriptions encapsulated in cultural metaphors used to give them meaning and value. If not safeguarded, globalization, with its major focus on efficiency, expedience and commerce, seems bound to eliminate many of those aspects.

Linguist K. David Harrison, Swarthmore College, states that some 7,000 distinct languages are spoken in the world today, and one of them dies about every two weeks. This rate of language extinction is very alarming. It far exceeds that of birds, mammals, fish or plants and that language loss often parallels loss of biological species. More than half of the world's human languages have no written form, therefore, he warns, when the last speaker of many of these languages vanishes, the language will be lost because there are no dictionaries, no literature, no text of any kind. Losing languages translates directly into losing knowledge. Most of what humans know about the world is encoded in spoken/written languages. With their loss, centuries of human thought and knowledge are simultaneously lost. Traveling across the American continent, one becomes aware of indicators, that corporations, clubs and church groups have adopted a highway mile or more and sponsor its maintenance and clean up. The venerable Audubon Society monitors bird species to protect them and their wilderness habitats. Whole development-projects are put on hold by court intervention, because rare species of birds, fish or turtles would be displaced. Wilderness societies like the Sierra Club and Nature Conservancy advocate for the preservation of land, trees and wild life, against industrial intrusion and conversion of wilderness into public recreational lands, while individual citizens 'adopt' or sponsor zoo animals of endangered species. But it is totally curious that there are few signs of public concern and advocacy outside the academic community for the protection of endangered indigenous cultures, languages and customs. With Darwinian callousness, namely survival of the fittest, the powerful know that their cultures are relatively safe in the process of globalization, and in an inhuman gesture to a more defenseless tribal man, care little about his vulnerability and those things that speak of more varied, diverse and richer worlds.

LOOSING

LANGUAGE, LOOSING CULTURE, LOOSING KNOWLEDGE

On January 25, 2008, the Associated Press reported that Marie Smith Jones, who had worked to preserve her heritage as the last full-blooded member of Alaska's Eyak Indians died at the age of 89. She was the last fluent speaker of her native language. Marie Smith Jones worked diligently to preserve Eyak, a branch of the Athabaskan Indian language family tree. Her efforts were to construct a written record of the language so future generations would have the chance to resurrect it. Marie Smith Jones spoke twice at the United Nations on peace and the importance of indigenous languages. "With her death, the Eyak language becomes extinct," Michael Krauss, a linguist at the University of Alaska Fairbanks, who collaborated with her, said. He believes that in all nearly twenty native Alaskan languages are at great risk of disappearing. He fears that with it the unique intellectual heritage of this part of the world also risks the same fate. Krauss described her as a "wonderfully ordinary Eyak lady who lived to a ripe old age not because of an easy life but because of a rather hard life, coming up and surviving as an Eyak in the 20th century." Being the last of her kind for the last fifteen years, Krauss said, "was a tragic mantle that [Ms. Jones] bore with great dignity, grace, and spirit."

ATTEMPTS

TO STREAMLINE WORLD LANGUAGES

In 1973, Irish (Gaeilge) was accorded 'treaty language' status by the European Union with the advantage that the founding treaty was restated in Irish. Irish (Gaeilge) was declared one of the authentic languages with which to correspond with EU institutions. However, despite being the first official language of Ireland, including its minority-language status in Northern Ireland, Irish was not made an official working language of the EU until January 1, 2007, which meant that until then legislation approved by the European Parliament and the Council of Ministers was not translated into Irish. Because there are only 538,500 citizens who use Irish on a daily basis (of a maximum of 1,660,000 speakers in a population of 4,240,000), there is fear that the EU will see the requirement for Irish as too cumbersome and expensive, and favor the Anglicization of its communication with Ireland. Even though one easily thinks that after achieving Irish independence, the number of citizens speaking Irish would have increased, today's facts show a serious decline, with possible reasons due to the state's pressure on Irish-speakers to use English, the primary language of education and employment. The December 2006 government announcement of a twenty-year plan to help Ireland become a fully bilingual country, encouraging the use of Irish language in daily life, does not stave off its decline or possibility of ceasing to exist.

Supposedly, when Bill Gates launched Microsoft's Encarta World Dictionary in 1993, using his "one world, one dictionary" slogan, he was considered a representative of an evil totalitarian empire, because in his Internationalist attempt to streamline world languages, he ran immediately afoul with the Irish culture, in which many scholars had observed the serious decline of their root languages and the erosion of Irish language, which was slowly giving in to English. They argued that the Belfast Agreement recognized that all languages indigenous to Ireland are part of the cultural wealth of the nation, and will continue to be central to the social development of the Republic and Northern Ireland and worked diligently to rebuild the Irish language from the ground up. They hoped that mankind would never descend into the abyss of making a uniform world. "One world, one language" seemed just a generation away. Gates was blamed for a false totalitarian, culture-negating ideal. "One mind, one world, one word dictionary" was considered by many as a retailing gimmick. But it loomed heavily atop Irish cultural survival. Under great pressure and sharp rejection, Microsoft developed an Irish language version and publicized its accomplishment: "At Microsoft, we believe that people and their communities around the world are more likely to benefit from technology when it is available in their native language. This commitment is shared at Microsoft Ireland where we have developed Irish language versions of our popular Windows and Office products."

SOCIOLINGUISTICS

All linguistic systems, including 'visual language,' innately respond to behavioral, social and cultural needs of a group (Meyerhoff, 2006); supporting the person's self identity, that of groups and signaling clearly to others their territorial status in perceived hierarchies. In 'visual language' as in sociolinguistics, each segment of its taxonomy is organized to accommodate high and low, casual and formal aspects of a language. Designers need not agree or even like these facts, all living languages have constant and dynamic shifts, but designers need to understand and appreciate the cultural and social contexts. If citizens need to understand and appreciate the complexity of the world in the process of globalization, they need to become tolerant, but not necessarily to share the same experiences. A contemporary sociolinguistic view of 'visual language' would not exclude any visual statement, but would rather place it clearly into a functional taxonomy in which it is not pitted against everything, but placed into an analysis within its appropriate context.

For example, one may or may not find the Hallmark greeting card of high artistic value or of great design merit. But the outsider's or the elite communication designer's opinion does not really matter. If the Hallmark card is a well functioning device in daily life, that helps individuals negotiate their everyday social contracts, and if the culture agrees that greeting cards are useful communication devices with strong predictable social ramifications, then greeting cards have social and cultural standing. The analyses of their merit by art or design critics may be interesting, but this is totally irrelevant. Today's sociology tries to look at things as they are, rather than how they are fitted into a power hierarchy.

Any monolithic 'visual language' (or in fact any temporally dominating design style) depends to a great degree on isolation that is artificially introduced and cultivated. For example, Hitler's banishment of modern expressive art 'degenerate art,' did not stop the evolution of Expressionism, but gave room for a short period of time to a very stilted German fascist iconography that infiltrated all homes, in some cases even the homes of the artistic and intellectual elite.

Ideally, most citizens would prefer a socially desirable segregation between the strata of the power community and the rest of the public, looking to find or construct their own rationales for forming their identities as part of communities. But the reality is that all clans, tribes and communities strive to define their identities and values for all through indigenous architecture, the specific holdings and collections of museums, which are clear indications of a community's values. Because the social codes for all cultures are defined by an elite (academic intelligentsia, journalistic perspective, publishing, education, rhetoric of church, government and commerce) and accepted by a majority, individuals select from them, to underscore the philosophical gestalt that supports their representational identity to others in a relentless dynamic competition for status and hierarchical standing (economic class, education, professional standing and imposed or self-imposed caste, sub-culture and interest community).

Sociolinguistics offers opportunities to isolate features from the complex system of linguistic forms. It presents opportunities to construct a discourse that indicates either close or distant social relationships between speaker and audience. It makes clear when a narrative is used in particular formal or informal situations and marks the significant elements of the situation (gravity, triviality, insignificance, etc.). 'Visual communication' has not matured to that point. It is still neutral, frequently presenting important and trivial subjects in the same visual dress. A sound approach would compare the limited principles of visual literacy with the linguistic paradigm of social-rhetorical theory, and learn from it. This would have two very valuable ramifications. Visual communication would become more nuanced and sensitive, and the designer broader and better educated.

In modern rhetorical theory, while the arts continuously redefined aesthetics, the value of a literary contribution moved from focus on the author to the specificity of narratives and the preparedness or receptivity of audiences. A new value emerged – a product of a synthesized experience – energized by the social material and cultural baggage that an audience brings. Linguists knew early that all perceptions of truth are flexible from well informed to erroneously constructed. Perceptions are sturdy; they withstand enormous assault, as any national election will bear out. They are what they are. They can be altered over time, but not instantaneously. For that the information has to be culturally relevant.

The Governance Through Metaphor Project

The Union of International Associations, Brussels, Belgium, is a century old, non-profit research organization investigating the use of metaphor as a tool to further possibilities for a sustainable global civil society, promoting and facilitating understanding of representations of valid interests in all human activities: philosophical, religious, ideological beliefs and scientific, artistic and trade-related activities, in response to world problems. Since the 1980s the association has been exploring the role of metaphor in relation to governance, understanding world problems and the articulation of more appropriate and transformative organizational strategies.

Even though metaphors are a natural form of presentation in many cultures, the information gleaned from the "Governance Through Metaphor Project" points to many cultural constraints inherent in each language, social and cultural communication processes (verbal/written) and certain characteristics embedded in some languages that facilitate or hinder comprehension and are not easily overcome. In addition, there exists the dilemma of many possible views concerning the nature of sustainable human development. The use of metaphor as a vital ingredient in global negotiations has not been systematically and deliberately explored to overcome fundamental communication weaknesses.

VISUAL

METAPHOR IN GLOBAL USE

In its political eagerness to control, visual communication design is proud of having persuaded educational institutions to eliminate illustration programs all together. Before design became so powerful, a general education would celebrate the metaphoric contributions by Francisco de Goya or Leonard Baskin. Artists like Ben Shahn and Saul Steinberg were always part of the cultural discussion, and so was the work of David Stone Martin, Alice and Martin Provensen, Bob Peak, Franklin McMahon, Bernie Fuchs, Fred Otnes, Tomi Ungerer, Gary Kelley, Ronald Searle, André Francois, Ralph Steadman, Edward Gorey, Geoffrey Moss and Brad Holland, among many others. David Stone Martin was known for capturing the rhythmic energies of jazz; Ben Shahn for social and political reporting; and Saul Steinberg as an insightful cultural observer and literate critic. Ronald Searle and André Francois were contributing with great humor and cultural wisdom; and Tomi Ungerer as satirical social observer; while Geoffrey Moss (featured in next pages) created images that stand alone, without any support of text; Brad Holland and Ralph Steadman still exploit visual opportunities by inventing smart, surreal and sardonic editorial and political statements. These illustrators are known for their ability to invent provocative communication metaphors. *(See table 1 for web addresses of artists/ illustrators mentioned.)*

Designers have lost their ability to originate images and have thrown out this skill with the technological bathwater. They are now primarily excellent typographers in relationship to times before type generating software came into existence, but now that everybody knows the typographic styling codes, designers stand exposed, incompetent as visual communicators, having lost the important skill of developing visual metaphor that can stand up on its own without textual support. They have relinquished this territory totally to photographers.

A look at any annual, which supposedly presents the best and most successful visual communication projects, shows redundancy, repetition, predictability and flatness of design metaphors. For example: the Shoshin Society catalogue (Helmken, 1983) presenting contributions of the most prominent American designers to a poster exhibition that commemorated the atomic destruction of Hiroshima and Nagasaki could be organized into very few categories of visual content, signaling a dearth of metaphor development.

Poster design in Poland, especially the work by Roman Cieslewicz, Jerzy Czerniawski, Mieczyslaw Gorowski, Franciszek Starowieyski and Leszek Wisniewski, is a good example of a rich and metaphor-laden visual language. In film one can test the contribution and collaboration of sound and movable images that support the narrative. In good films, both sound and film tracks usually can stand independently, making sense. Not so in visual communication design. If the type message is removed, the images make little sense. There is visual silence, induced by visual one-liners.

Here and there throughout this paper Geoffrey Moss' political drawings appear – they are not visually silent. Syndicated without 'text captions,' they are an example of pure visual communication. He is best known for his book of political satire, *The Art and Politics of Geoffrey Moss* (with a foreword by Dan Rather). To his credit, he has been nominated for a Pulitzer Prize; has three university degrees and is a teacher and lecturer on conceptual thinking. His work has appeared in *The New York Times, Chicago Tribune, The Washington Post, Time, Newsweek, U.S. News & World Report* and many others.

In view of Modernism's many failures regarding its attempts to limit diverse cultural expression by oversimplification, streamlining and standardizing forms of expression and visual and verbal languages, it is time to look at the significance and benefits of cultural diversity, through which individual cultural qualities contribute to an understanding of the infinite complexities that create perceptions of the universe, and through them the value systems that support these views. Much of the thinking in communication design stems from the past. Philosophers Susanne Langer and Ernst Cassierer[1] would give great credit to the logic, order, clarity and science embedded in information design and the required skills of transformation, projection to develop alternative descriptive systems, of invention of symbolic modes, while controlling the variable relationship of form and content. They would open up a serious discussion on Immanuel Kant's "adventure of ideas" – this suggests a need to reflect on the phenomenal character of experience, which is messy and unpredictable. They would want communicators to begin to investigate the spiritual function of symbols, which vacillate between superstition on one side and frozen, dogmatic righteous beliefs on the other, as well as on emotions, through which all information is filtered, and which classifies useful and important or negligible items. They form the mental state associated with a wide variety of feelings, thoughts and behaviors, as well as psychological and physiological responses.

TABLE 1

American, English, French and Polish artists and illustrators who strongly use visual metaphor

Baskin, Leonard
http://www.smith.edu/artmuseum/exhibitions/baskin/index.htm;

http://lts.brandeis.edu/research/archivesspeccoll/events/baskin/introduction/introduction.html;

English, Mark
http://www.markenglishonline.com/images01.htm

http://www.markenglishonline.com/images02.htm

http://www.illustrationacademy.com/MarkEnglish.htm#

Francois, Andre
http://www.artnet.com/artist/178013/andre-francois.html

Fuchs, Bernie
http://www.famous-artists-school.com/index.php/fas/bernie_fuchs/

Gory, Edward
http://www.lunaea.com/words/gorey/

Holland, Brad
http://www.bradholland.net/beta/portfolios/portfolio-Edi.html

Kelley, Gary
http://www.allposters.com/gallery.asp?aid=4701111 66&c=c&search=25671&DestType=12&Referrer%20 =http://www.google.com/search?hl=en&q=Gary+Kelley&btnG=Google+Search&aq=f&oq=&KWID=12620714 &KEYWORD=Gary+Kelley&SEM=lang%3D1%26c%3Dc %26search%3D25671%26AID%3D470111166%26KWID%3D12620714%26Keyword%3DGary%2BKelley

http://www.illustrationacademy.com/SanFran/sfweb-pics/jsviewer1.3%20copy/show.html

http://www.illustrationacademy.com/SanFran/SF-07web/SFgaryslideshow/Garyslides07.html

McMahon, Franklin
http://mcmahonartgallery.com/originalartwork.html

Otnes, Fred
http://reecegalleries.com/Paintings/Otnes/Otnes_Intro.html

http://www.veer.com/products/artistgallery.aspx?artist=2843
http://www.illustrator.net/fotnes/default.asp

Peak, Bob
http://www.bobpeak.com/

Searle, Ronald
http://www.ronaldsearle.co.uk/

http://www.press.uchicago.edu/Misc/Chicao/744086.html

http://lambiek.net/artists/s/searle_ronald.htm

Steadman, Ralph
http://www.cartoons.ac.uk/search/cartoon_item/Ralph%20Steadman+AND+artist:%22Ralph+Steadman%22

Steinberg, Saul
http://www.saulsteinbergfoundation.org/gallery.html

http://www.nga.gov/fcgi-bin/gemini.pl?slide=1&artist=52

http://www.cartoonbank.com/Steinberg/prints_steinberg_bio.asp

Ungerer, Tomi
http://www.dhm.de/ausstellungen/ungerer/

http://www.nytimes.com/slideshow/2008/07/27/arts/0727-KENNEDY_index.html

http://thenonist.com/index.php/thenonist/permalink/perverse_subversive_and_absurd/

Polish designers/illustrators

Cieslewicz, Roman
http://www.theartofposter.com/search2.asp?author=Cieslewicz+Roman&title=&years=&category=all&country=all&print=all&director=&titleo=&actor=&countryp=all&authorp=&id=&Submit=++Search++

Czerniawski, Jerzy
http://www.theartofposter.com/search2.asp?author=Czerniawski+Jerzy&title=&years=&category=all&country=all&print=all&director=&titleo=&actor=&countryp=all&authorp=&id=&Submit=++Search++

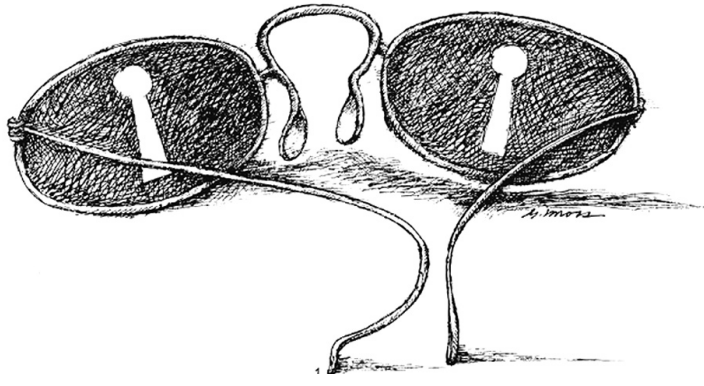
Gorowski, Mieczyslaw
http://www.theartofposter.com/search2.asp?author=Gorowski+Mieczyslaw&title=&years=&category=all&country=all&print=all&director=&titleo=&actor=&countryp=all&authorp=&id=&Submit=++Search++

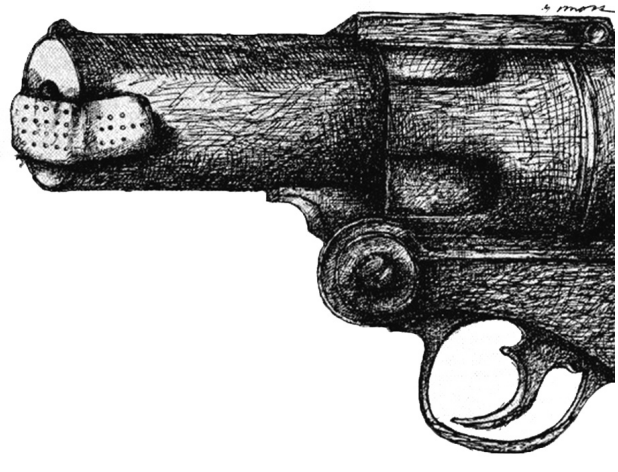
Starowieyski, Franciszek
http://www.posterpage.ch/exhib/ex81_sta/ex81_sta.htm

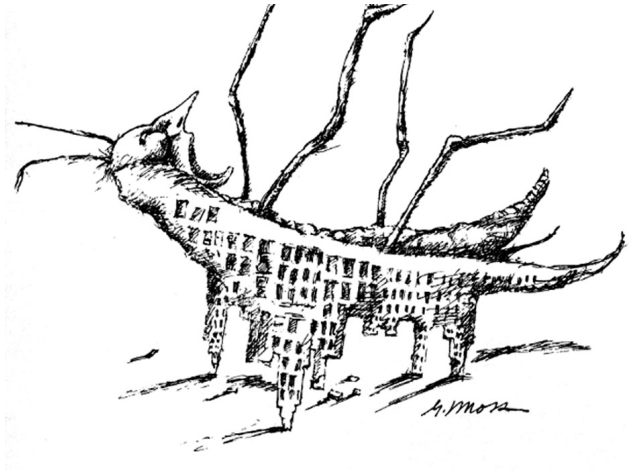
http://www.theartofposter.com/search2.asp?author=Starowieyski+Franciszek&title=&years=&category=all&country=all&print=all&director=&titleo=&actor=&countryp=all&authorp=&id=&Submit=++Search++

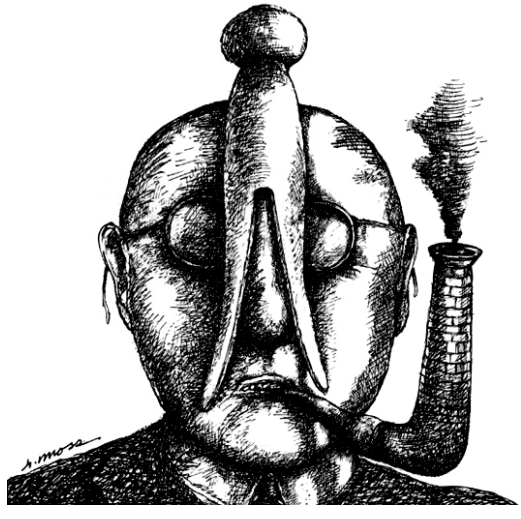
Wisniewski, Leszek
http://www.theartofposter.com/search2.asp?author=Wisniewski+Leszek&title=&years=&category=all&country=all&print=all&director=&titleo=&actor=&countryp=all&authorp=&id=&Submit=++Search++

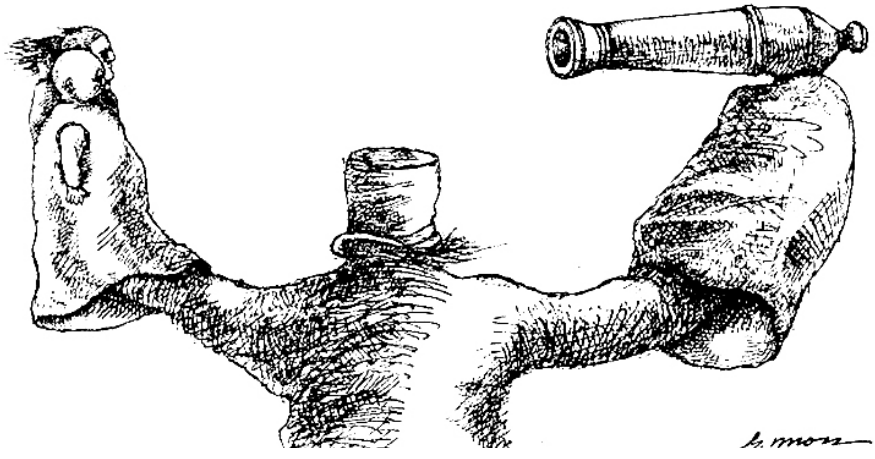
The following images by Geoffrey Moss demonstrate wordless communication. Reproduced with permission.

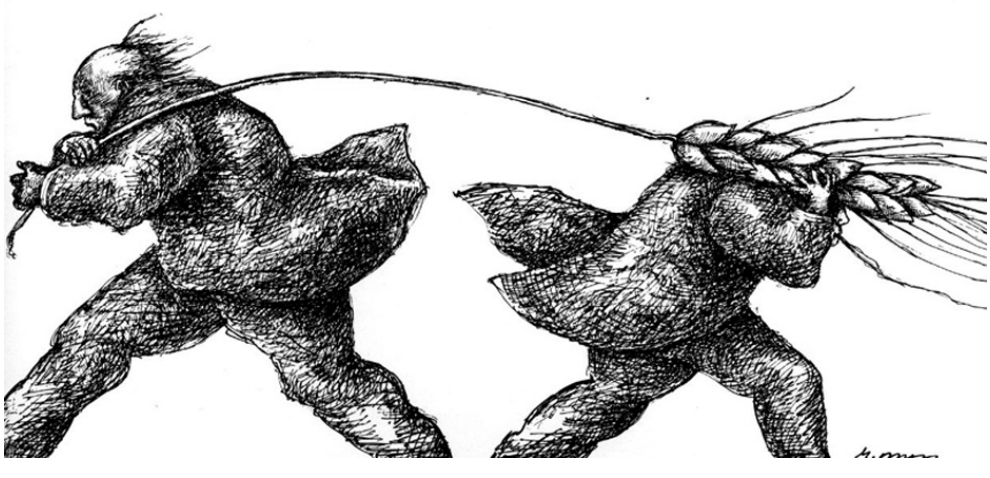


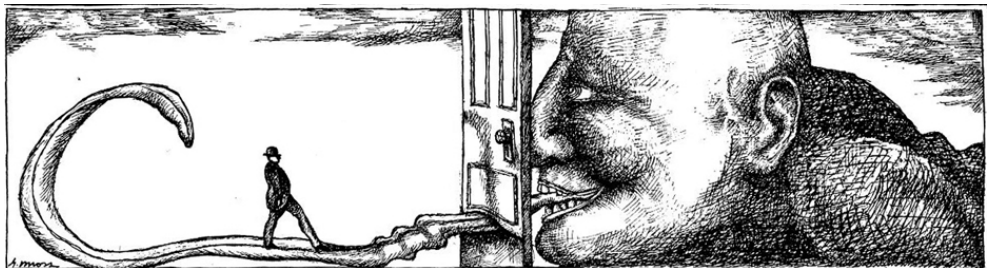


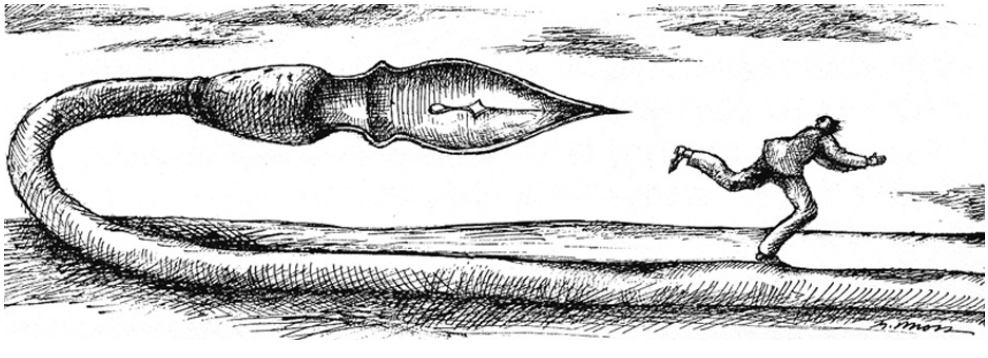












CONCLUSION

Over the past century, sociologists, anthropologists, psychologists and linguists have investigated and revealed principles of communication. They have contributed variously to theoretical knowledge on processes and necessary aptitudes that facilitate or interfere with communication within complex human environments. The communication practice has not yet applied and tested their revelations.

Facts that humans cannot refuse, but must communicate to assure their survival have been underlined and stressed, and that all forms (personal, cultural, social/hierarchical, professional, formal/informal) that make up these most vital areas are necessary (verbal, textual, gestural, spatial, tactile, still/moving, virtual/real). Everything, from dress, hairstyle to linguistic fidelity or sloppiness, including silence or deliberate or unintentional removal from the communication process becomes an issue in forming perceptions about the speaker, the message, and the intent. Each culture is self-absorbed by its own survival issues and will deal with others when forced, or when circumstances are convenient or beneficial. Most of the assembled perceptions of another culture are stereotypical – are distortions of reality – with a selected view of some coarse characteristics that have roots in some behavior, but are formulaic and oversimplified. They usually lag behind in timeframe, referring to bygone times rather than current behaviors. Stereotypical views are very difficult to reverse, because the response to a message equals that of a well-trained boxer, who presumes to understand the characteristics of his potential adversaries, and instinctively in split seconds, responds intuitively to the information at hand.

Over the period of human existence the major cultural investment has been in recording information in textual form, fostered by ancient efficient traditions of collecting and storing written data in form of tablets, papyrus scrolls and parchment pages, and expediently continued into the present by the ingenious printing and reproduction processes found in many cultures. The communication processes of state, court, church and academy happen primarily through text, and for the uneducated through highly abbreviated image narratives, like the fourteen Stations of the Cross in early Christian traditions, or contemporary comic strips. Children are introduced to reading text at a very early age and the reading curriculum accelerates in complexity (grammar, vocabularies, metaphors, critical analysis) throughout adolescence, coming to fruition during formal academic education, which continues to be predominantly text/word based – lectures, reading assignments, written tests, theses and dissertations.

Much less focus has been placed on the visual, especially outside of the visual presentation of emotionally cool, scientific information. Because American art and design schools have fostered self-expression, the poetics of literature are frequently crippled in the resulting designers' inabilities to cross cultural lines and barriers. In relationship to massive efforts in textual education, only a small percentage of educators and students are seriously investigating visual phenomena, visual language and visual literacy. Very few students take courses in art history (a field of expertise, which in itself is already highly specialized and removed from everyday reality), or critical analysis of how images are viewed and interpreted, with the result that the public's understanding of the function and contents of images and icons is lagging far behind the word and text worlds.

In the early 1960s, in a lecture, Gyory Kepes, artist, designer and founder of Center for Advanced Visual Studies at MIT, seemed to convey the idea that in the future the image/icon would become more powerful and important than text, especially because of global needs for better intercultural communication. He did not provide deep rationales.[2] However, communication designers, who used this erroneously as a professional banner of their communication competence, quickly picked up his thoughts. Kepes' promise has not

become reality and it most likely can't, because to accomplish intercultural visual communication there are components that need to be addressed by art/design schools as well as universities, namely an intercultural visual communication theory, that is not Eurocentric, but is in response to various cultural visual literacies. General communication design must take notice that a truth on this side of the mountains is possibly an unsettling error on the other (Blaise Pascal paraphrased).

Cultural communication is not a process in which professionals speak just to other professionals. It requires not only a deep commitment to cultural understanding through which communication between people of all kinds of differences in social, economic, and ideological strata, is facilitated, but also the willingness to educate the public, giving them everyday tools to seamlessly participate. At this point in time, sophisticated and sensitive intercultural visual communication stays a utopian ideal. Unless academic institutions begin to provide directions for integrating theory into practice, visual communication fidelity will stay an utopian ideal.

1 Suzanne Langer translated and represented Ernst Cassierer's work in the United States.

2 Gyorgy Kepes formally wrote very little, but actively demonstrated ideas through his own work, teaching and editing the work and ideas of key modernists.

AUTHOR NOTE

Dietmar R. Winkler is professor emeritus at the University of Massachusetts Dartmouth. He has decades of experience as a notable communication designer and design educator in the roles of professor, director and dean. Since 1960, he has been examining and writing about issues affecting professional design practice and communication design education. His interdisciplinary interests have been to expand narrow traditional visual and form/function literacies to include user-based design in behavioral, social and cultural contexts.

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THINKERINGSPACE:

DESIGNING FOR COLLABORATION

AROUND THE BOOK AND BEYOND

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ABSTRACT

Innovation, collaboration and system thinking are increasingly recognized as skills that can be useful to children, and that can help ensure their success as citizens and workers in the 21st century. Seeking to improve opportunities for young people to develop abilities and competencies for the future and to narrow the complexity gap left by *No Child Left Behind* (the US federal law of 2001 that enacts the theories of standard-based education reform) when children are confronted with more conceptual thinking, a new genre of collaborative environments is being envisioned, called ThinkeringSpace.

As a hybrid system of networked and remotely accessible physical environments, ThinkeringSpace seeks to inspire children to come together face-to-face to collaborate and tinker, reflect upon what they do and discover and elaborate their ideas in ways they can share with others. This paper gives an overview of the ThinkeringSpace system and its development. In addition, it discusses the process of designing for collaboration, whether face-to-face, stigmergic, online or hybrid, illustrating it with interactive prototype concepts.

INTRODUCTION

Creative thinking and collaboration skills are increasingly being recognized as some of the skills that separate students who are prepared or not for the ever more complex life and work environments in the 21st century. According to the Partnership for 21st Century Skills (2007), who gathered business community, education leaders, and policymakers to define a view of the future, three major sets of skills will be important for children: learning and innovation skills; information, media and technology skills; and life and career skills.

No Child Left Behind, however, has turned the focus of schools to the improvement of basic skills only, narrowing what many schools teach, leaving children unprepared for the future ahead of them. According to Toppo (2007), annual testing requirements in math and reading have absorbed much time and energy at the expense of other aspects of curricula, and performance improvements in the lower grades are often not reflected later – leading to a complexity gap when kids are confronted with more conceptual thinking in higher grades. With that in place, other informal learning venues, then, become necessary to collectively expand the opportunities children have to succeed.

Concerned with the educational needs of children, the MacArthur Foundation launched a five-year, $50 million digital media and learning initiative in 2006 to: 1) help determine how digital technologies are changing the way young people learn, play, socialize, exercise judgment and engage in civic life; 2) learn how learning environments may be changing; and 3) seed innovation for continued growth. As part of the third wing of the initiative, the ThinkeringSpace project is focused on envisioning new informal learning spaces, to be situated within libraries, to captivate the Internet generation (Howe and Strauss, 2000; Oblinger and Oblinger, 2005), allow children to explore their 'own wonderful ideas' (Duckworth, 1996) and support the development of necessary skills and competencies not addressed in the U.S. traditional school system.

Having explained some of the motivation behind the development of ThinkeringSpaces, the following sections give an overview of the ThinkeringSpace system and the design and development process. In addition, they explain how these special places can support collaborative experiences and discuss the process of designing for collaboration.

THINKERINGSPACE

OVERVIEW

ThinkeringSpaces are collaborative environments that seek to support physical and virtual exploration, co-authoring and co-construction. These special places within content-rich institutions take children through the dialectic of tangible and symbolic, generating new integrated knowledge and skills. Although initially focused on school-aged children in libraries, it potentially applies to a wide range of ages and contexts – from after-school program to work space, supporting hybrid interaction and stigmergic collaboration (Grasse, 1959), a method of communication where individuals convey meaning to one another by modifying their local environment. Overall, it celebrates the book – making it the starting point for physical-virtual exploration and discovery – and allows children to follow their 'own wonderful ideas' and interests, co-construct their experiences, co-author stories and share the evolving results with others.

Structured to provide ways for children to make their creations and ideas visible and to share them with others, by adapting to different individual interests and styles, they focus on promoting productive inquiry and multiple ways of knowing. Combining smart spaces, tangible interfaces, large scale multimodal technologies, multi-input digital devices, sensorial objects, symbolic cues, open-ended activities and evolving content, ThinkeringSpaces create new experiential opportunities for exploring through tinkering and interacting both locally and remotely. By promoting fluid interplay of physical and virtual experiences, these environments introduce a new genre of hybrid interactive spaces.

System Description

Conceived as a hybrid system that combines physical and virtual environments, ThinkeringSpace aims to promote and support thinking skills for the 21st century. Mainly designed to encourage children to collaborate face-to-face, it also extends children's opportunities beyond the physical space by accommodating remote and mixed reality, or hybrid interactions. ThinkeringSpace physical installations are: platform-based, freestanding, scalable, reconfigurable, independent of building architecture, easily monitored and maintained and self-contained with their own infrastructure. Combining multi-user input and large scale technologies, they provide new opportunities for doing things together through shared input and output control.

The virtual extension of ThinkeringSpace physical environments is called ThinkerNet. It allows tinkerers to: build individual and group profiles based on one's interests, locate interest groups and mentors, connect to a network of mentors of all ages, brainstorm, collaborate, access tinkering projects to build upon, store one's history of interactions, develop a portfolio and share creations. It encourages community building through online membership networks, while paying attention to children's cyber safety.

Design and Development Process

The design and development process of the ThinkeringSpace system began in the summer of 2006. This initial phase, known as 'framing the project,' included: a) identification of working assumptions, b) definition of project approach, c) formulation of initial research questions, d) review of literature review on learning theory, best examples of existing learning environments, newly available technologies, flexible structures and social trends, e) development of conceptual frameworks from insights and speculation drawn from the influence of the literature review, f) derivation of early best-guess actionable design criteria and principles, g) generation of conceptual, structural and behavioral prototypes (Moura, Fahnstrom, Prygrocki and McLeish, 2008), h) development of selected concepts in low level form, i) conduction of user observation within the prototype space, j) analysis of data and iteration and refinement of the design criteria and principles and k) initiation of website (http://www.ThinkeringSpace.com), describing the project and documenting the design process. Some of the high level design principles that were proposed during this initial phase are: empower children to become authors, provide affordances for collaboration, support multiple interaction models and make the environments flexible.

The second phase took place during the summer of 2007 and was concerned with understanding libraries in the Chicago Metropolitan area. It involved the mapping of this library system and in-depth study of ten libraries. Through secondary research, important facts, issues and forces affecting libraries were identified. Through primary research, a rich window on specific library operations became available. This process made use of various information gathering methods and tools, such as video ethnographic observation, individual and group interviews, day-in-a-life journals and questionnaires. The main focus was placed on understanding the needs and rituals of librarians, library staff and patrons, to identify patterns of behavior. Subsequent analysis led to study insights that further informed the design of ThinkeringSpaces. These included: More Than Books – libraries are much more than warehouses of books or media; Constant Change – libraries have made continued efforts to meet patrons' expectations and keep up with technology; Underused Expertise – librarians have a broad range of expert skills that are little known and utilized by the public; and Life-long Relevance – patrons life-long interaction with libraries vary highly (from frequent to no use of the library). From these, implications for design were identified, such as: creating opportunities for inter-generational interaction and assessing interests and needs of different age groups better.

The current phase deals with learning by prototyping; it includes the iterative development of a meta-prototype space located at the Institute of Design, Illinois Institute of Technology in Chicago. The goal of this meta-prototype, consisting of the post and beam structural frame and technology-enhanced spatial elements, is to help define the prototype installations that will be situated in real libraries. Also included in this phase is the design of interactive prototype concepts that make use of the spatial elements, as exemplars of the range of activities that can be supported by the system. Finally, the proposed in-situ prototyping in a Chicago Metropolitan area library includes user observation and iteration of the concepts and spatial affordances.

The next and final phase of the grant is concerned with guiding integration of ThinkeringSpace into the library community. Informed by prototyping, it includes the description of the final implementation strategy, overall system description and guidelines, that will allow library administrators and librarians to define how a ThinkeringSpace installation will look in their library, and what theme and activities will be implemented.

The following section defines and describes different types of collaboration, and discusses the process of designing collaborative experiences.

COLLABORATION

Collaboration (Camarinha-Matos and Afsarmanesh, 2006; Fuks, Raposo, Gerosa, Pimentel, Filippo and Lucena, 2008; and Dillenbourg, Baker, Blaye and O'Malley, 1996) can be defined as: a process where two or more people plan and work together towards a common goal, in which individual contributions to value creation are difficult to determine; a process of co-engagement in acting, thinking, planning, deciding and working, which results in the emergence of shared understandings and a creative output; a process that begins with developing a mutual vision and ends with implementing and assessing the action plan; or a process through which a group of entities enhance the capabilities of each other. Elliot (2007, p.31) proposes that the definition of the term collaboration can be consolidated as the following: "[it] is the process of two or more people collectively creating emergent, shared representations [both internalized and externalized] of a process and or [creative] outcome that reflects the input of the total body of contributors."

In the literature across disciplines, often times the word is used interchangeably with terms such as cooperation and coordination. The first term, however, refers to collective activity of operating together, aimed at a shared pursuit or goal, without a creative component. And the second term refers to a fundamental enabling requirement for collective activities, even competitive ones, that involves bringing parts of a whole into proper combined order, or joint organization, and which is not characterized by the presence of a problem or dependent on either convergent or divergent exploration or production.

Different Types of Collaboration

Traditional face-to-face collaboration is characterized by co-location, co-temporality, multimodal communication, shared representation, iterative oral discourse, social negotiation and creative output. Ideally with two to six participants, these collaborations require less comfort with ambiguity, since doubts can be more quickly clarified by the group. If supported by the right technologies, these small groups can work well in hybrid and virtual contexts as well, both synchronously and asynchronously.

In the case of larger groups – beyond twenty-five participants, to a mass of tens or hundreds of thousands, however, collaboration becomes dependent upon stigmergy (Grasse, 1959), a method of communication in which individuals convey meaning to one another by altering their local environment. The stigmergic type of collaboration (Elliot, 2007) is characterized by embodied interactions (Dourish, 1999) and frozen actions (Norris, 2004) as a means of communication, leading to a creative output; these are extended and augmented by computing and digital networks. Shifting away from discourse and social negotiation, which go to the background, these collaborations allow fast and seamless integration of participant contributions to the group project, making it possible for individuals to contribute without discussing or justifying, or to discuss without contributing.

Supporting Collaboration

Supporting collaboration implies helping users to do things together, share information, expertise, risks, resources, responsibilities and rewards, and develop a unified view and action plan. Because collaboration, especially of the traditional type, involves reciprocal trust and seeks divergent insights, and because it is affected by the attitude, experience, skill and personality of the collaborators, supporting it requires attention to emotional, cognitive and social factors. Some important aspects to consider are the need to encourage: interest, motivation, reflection loops, collective dedication, teamwork strategy, group management, open communication, active listening, continuous group assessment, ongoing consensus building and sustainable interaction.

Notably, collaboration benefits from a shared environment for archiving and sharing information – ideally supporting both face-to-face, stigmergic, online and hybrid interactions. And interestingly, it does not require leadership and, in fact, can usually bring better results through decentralization and egalitarianism (Spence, 2005).

DESIGNING

FOR COLLABORATION

Designing for collaboration – whether face-to-face, stigmergic, online or hybrid – starts with designing for communication, coordination and cooperation, as well as supporting both divergent and convergent thinking as well as creative outputs. Designing for communication involves supporting the negotiation of meaning – synchronously or asynchronously – across contexts. Designing for coordination includes supporting group members to be organized, be continuously in tune with one another and developing shared understandings. Designing for cooperation considers supporting joint operations in the shared workspace. Designing for convergent thinking relates to helping participants develop a unified view and action plan in their search for solutions to problems. And designing for divergent thinking and creative output takes into consideration supporting a process that moves from orientation to preparation to analysis to ideation to incubation to synthesis and to evaluation (Osborn, 1953). Overall, designing for collaboration refers to supporting people in working together, whether co-located or not. It is about supporting individual and group needs over time during collaborative activities.

Designing Collaborative Spaces for Tinkering Together

Within ThinkeringSpace installations, four main types of collaborative activities are being designed, supported by spaces and technologies: a) face-to-face multi-input collaboration; b) side-by-side multi-input large-scale collaboration; c) cross-media linking, artifact-based stigmergic collaboration; and d) hybrid collaboration, combining face-to-face interaction and the possibility for online mentoring.

An example of face-to-face multi-input collaboration being developed at ThinkeringSpace is a table with multi-input control. This circular collaborative table screen surface, or 'pond' *(figures 1 and 2)*, around which a group of users can stand, allows them to simultaneously input, browse and select information through multiple input and control devices, while maintaining face-to-face contact, and together, for instance, co-author a story or solve a problem. The central concept is to make it necessary for users to collaborate in order to accomplish any task.

FIGURE 1
ThinkeringSpace Meta-Prototype Space, showing the circular collaborative table or 'pond' under critical discussion

FIGURE 2
ThinkeringSpace collaborative table in use.

An example of side-by-side multi-input large-scale collaboration is the wall-sized screen augmented with wand controllers or batons for large-scale group interaction. In this activity, a group of users can stand in front of a large screen *(figure 3)* and share a baton in the input control of the interaction, while organizing information that, for example, other local users send to the screen through personal devices, such as cell phones. This type of setting allows users to create a project presentation that integrates multiple modes of representation of information.

An example of cross-media linking, artifact-based stigmergic collaboration, also taking advantage of the wall-sized screens, is the story creation activity. It makes use of artifacts, such as books, as the starting point of the conversation, allowing users to cross-link different media to it, such as a storytelling video they produce, a book review they write

FIGURE 3
ThinkeringSpace Meta-Prototype Space showing two of the large interactive screens.

or a website with related pictures they select. Upon return of the book, others can access comments made and links authored in relation to it, leading to all the different pathways that were created around and beyond the book – working as living trails for others to find, supporting stigmergic collaboration. Combined with user profile creation and identification of book interests, novel opportunities for networking and interacting face-to-face with people having similar interests could arise.

And an example of hybrid collaboration is the use of the large screens with batons and local webcams to combine face-to-face collaborative activity with the potential for online mentoring. This setting can allow participants to collaborate with others locally, while interacting with mentors online through ThinkerNet, making use of text or video input and output.

CONCLUSION

This paper gives an overview of the ThinkeringSpace system and design process. It highlights some of the issues related to the design of collaborative systems and describes different types of collaboration, giving examples of interactive prototype concepts that can support them. Currently, the ThinkeringSpace team is iterating the meta-prototype space situated at the Institute of Design, Illinois Institute of Technology, that will inform both the prototype installations that will be located in libraries within the Chicago Metropolitan area, and the final implementation strategy with its overall system description and user manual that will guide the configuration of new ThinkeringSpace installations.

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A MANDALA BROWSER USER STUDY:

VISUALIZING XML VERSIONS OF SHAKESPEARE'S PLAYS

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ABSTRACT

We report the results of a small user study of a visual XML browsing prototype, called the Mandala browser, where dots representing entire documents or portions of documents are plotted around the periphery of a circle and drawn inward by colored magnets that are assigned values by the user. The result is akin to a Venn diagram that provides a visual representation of the interaction between multiple Boolean queries. In this study, eleven participants were given a pre-study interview, then asked to carry out a series of tasks where the dots represented speeches in plays by Shakespeare and finally were debriefed in a concluding interview.

We gained from this study a range of valuable insights into how details of the Mandala browser design could be improved. Participants mentioned, for instance, that they would like to retain a connection between results and the visualizations that produced them, that they would like to be able to make notes on result sets, and that they would like to be able to save subsets within results. They also asked for tools that support collaborative searching, as well as for federated searching across collections. The user feedback confirmed the potential value of the Mandala interface and provided guidance for the next iteration of development.

INTRODUCTION

Browsing interfaces are intended for people interested in gaining some understanding of the contents of a collection, or in some cases of the set of results from an initial search retrieval. Browsing interfaces can therefore be seen as having a complementary relationship with retrieval interfaces, where the goal is to obtain a retrieval target. A typical approach to information browsing is to provide the user with a list of documents, which may be ordered according to some convention such as alphabetically by author or title, or chronologically by date of publication (sometimes called faceted browsing). A more visually complex approach is to organize documents in nested tiles where relevant information is expressed through the position, dimension and appearance of each tile (Schneiderman, 1992). Yet another approach is the Scatter/Gather browser proposed by Pirolli et al. (1996), who developed a prototype visualization where documents were represented by dots that could be grouped and subsetted dynamically by the user.

The literature includes a wide variety of examples of visually compelling browsing interfaces, including Small (1996) who proposed a 3D prospect view for browsing texts of Shakespeare's plays and Bederson (2001), who described a system for organizing thumbnails of images. More recently, designers working with public APIs (programmatic interfaces) from social networking sites like www.flickr.com have developed a number of browsing interfaces that extend Bederson's ideas through tools such as the color picker by Bumgardner (2005). Another example is the orbiting globes of information at http://dartdesign.de/, which allow the user to browse a constellation of moving representations that rotate under user control. The various crystal-based displays by Spoerri (2007) provide still further examples, and the 'dust & magnet' project by Yi et al. (2005) shows an inventive and interactive use of the magnet metaphor. In the context of rich-prospect browsing (Ruecker 2003), each of these interfaces includes some degree of meaningful representation, coupled with the provision of tools for manipulating the display. Browsing interfaces can also be used for studying parts of individual documents, such as the speeches in a play.

In addition to the discussion of browsing interfaces and their features, the literature also includes discussion of the methods of evaluation. For instance, Plaisant (2004) suggests the need for new and more comprehensive strategies for evaluating the success of browsing interface designs.

While most browsing interfaces provide both some representation of individual items and tools for manipulating the display, not all are concerned with the structural arrangement of the items (word clouds created at Wordle.org provide an example of arbitrary, though visually appealing, structural arrangements). However, in outlining their agenda for a phenomenological approach to interface design, Winograd and Flores (1986) suggest the possible value to the user of making an explicit structural coupling between the arrangement of information on screen and the underlying structure of the digital information in a collection. They suggest that this kind of coupling has the potential to provide the user with a number of insights into the nature of a collection—insights that would not otherwise be possible.

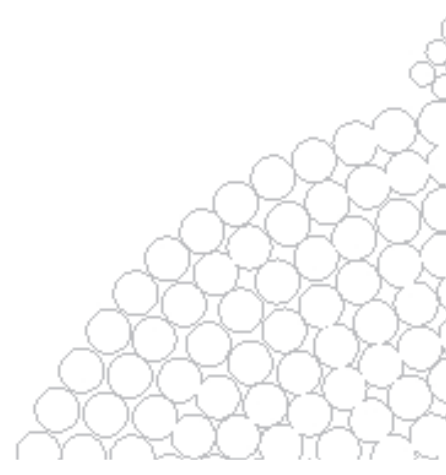
Ruecker (2003) outlines a number of areas in which these possible insights might occur, including: contents, structure, context, features, limitations, connections, trends, anomalies, navigation. In addition, he describes three advantages that accrue from the meaningful representation of content items, including reminders of the existence of items that otherwise might escape the user's attention, cognitive reassurance and reduced helplessness. Reducing the helplessness of users and increasing their sense of cognitive reassurance are important goals of information design.

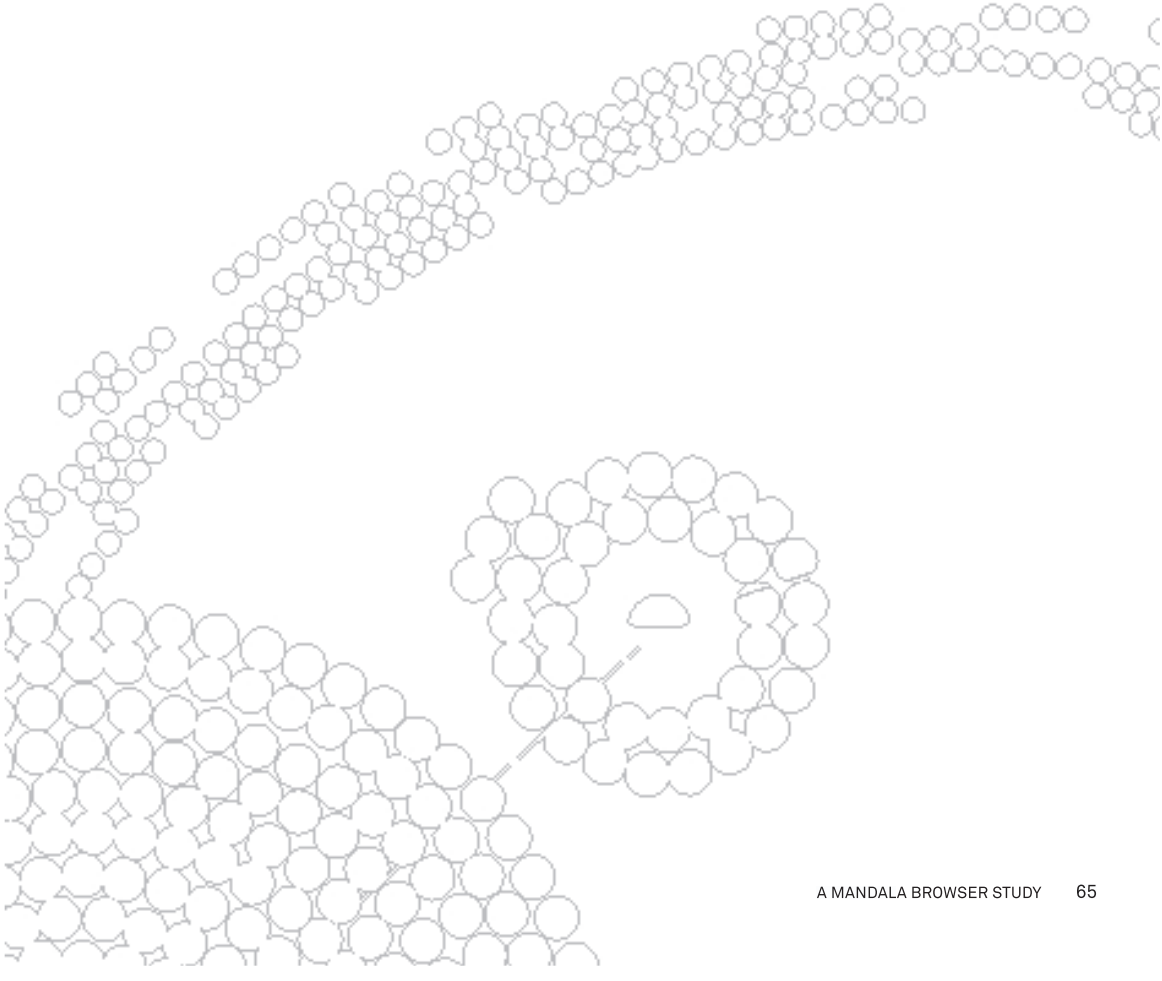
THE MANDALA BROWSER

In this project, we set out to test a new rich-prospect browsing interface, called the 'Mandala Browser' (Mandala) with the goal of developing better and more intuitive ways for users to search, perceive and filter large sets of XML information *(figure 1)*. This small-scale testing group, of only eleven people, allowed us to test the tools, assumptions and directions taking shape with this long-term and large-scale project.

The interface consists of a circular frame that is surrounded by dots, each one of which represents a collection item. The user interacts with the system by defining magnets to draw in items from the periphery. The result of the process is a kind of dynamic Venn diagram, with items falling into subsets according to the criteria the user has defined. The user can select individual items or can lasso groups of items to open on the right side of the display in the text reader. The browser can currently work with any well-formed XML-encoded document (regardless of what type of data are encoded in the document): the only requirement is that the XPath of items—or generic node addresses, such as all paragraphs in a document—be defined either in a separate configuration file or by the user in the interface itself.

We chose the Mandala metaphor for our design in part because we were interested in the argument that circular forms with a central tendency could have a positive emotional effect on users (Cheypesh et al., 2006). We also hoped to produce a tool that could support what Ramsay (2003) describes as algorithmic criticism and Moretti (2005) calls 'distant reading,' where visualizations can support tasks such as synthetic analyses, pattern recognition and hypothesis formulation.





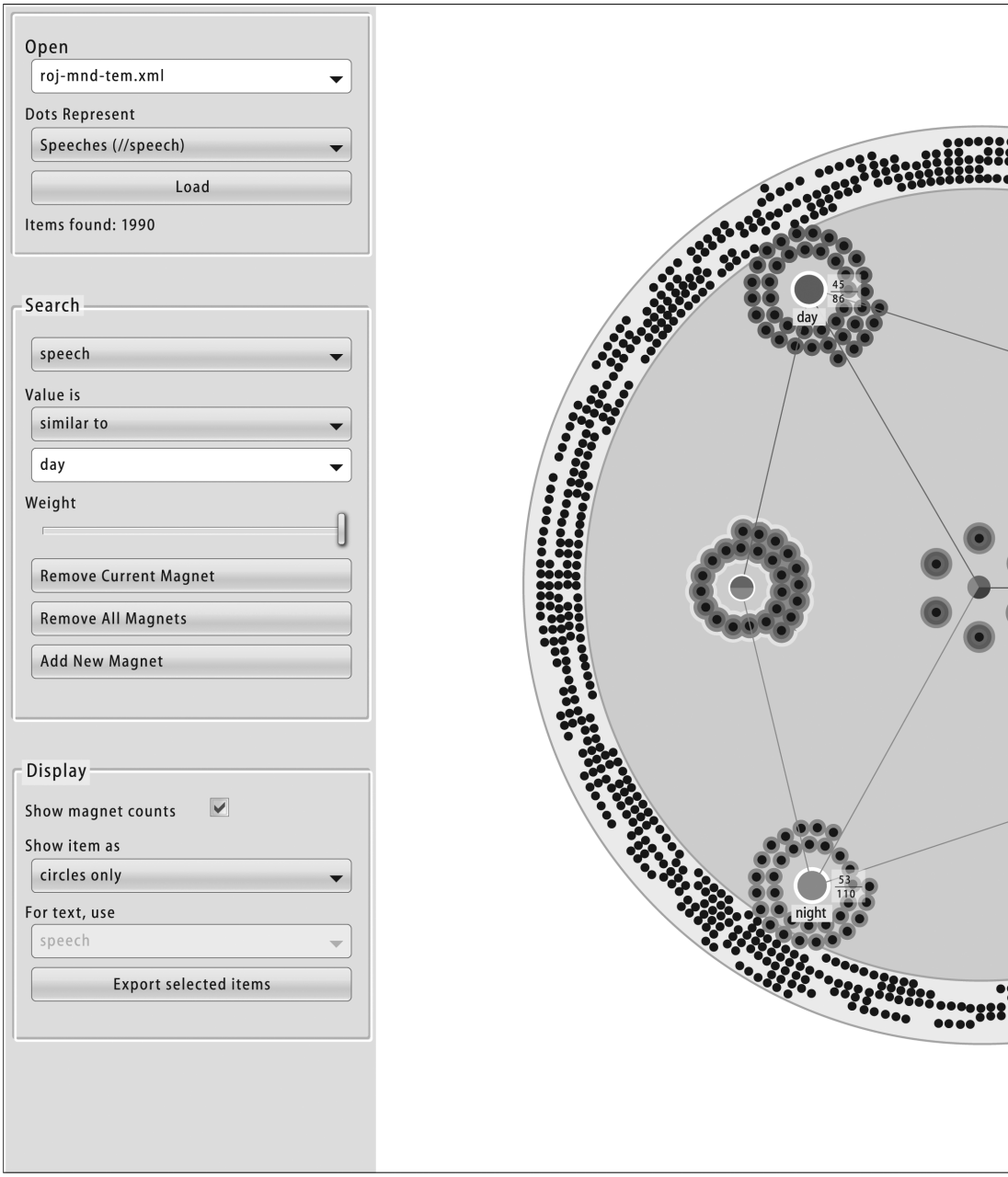
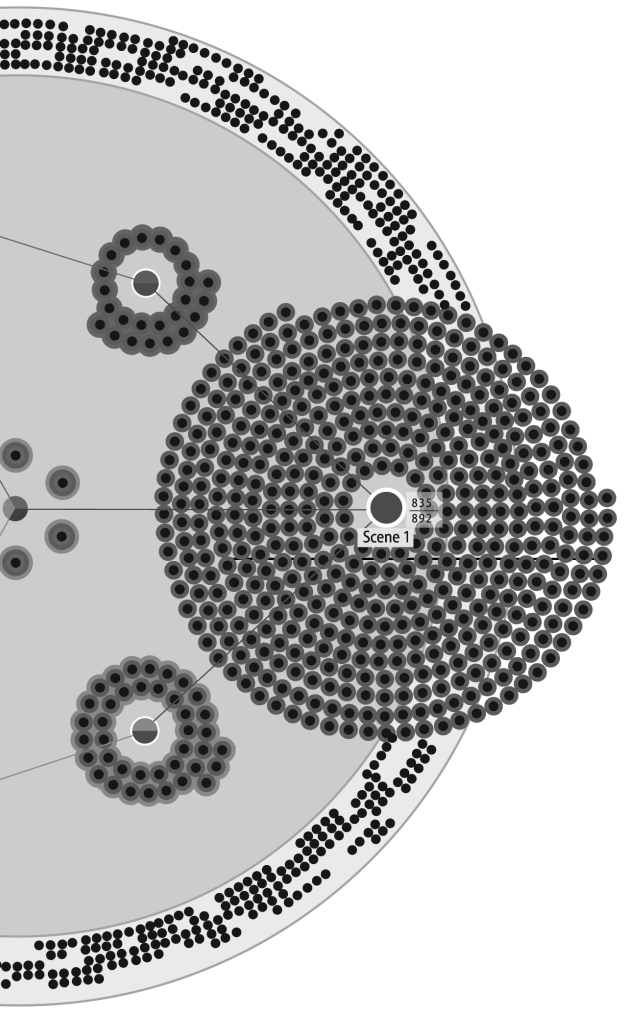


FIGURE 1
A basic task completed by one of the participants with the play Romeo and Juliet. The magnet on the left has attracted speeches containing the word 'night'; the magnet on the right has attracted speeches spoken by Juliet; and the joint magnet in the center shows speeches spoken by Juliet that contain the word 'night.'



Mandala Browser

mandala.humviz.org

by Stéfan Sinclair, Stan Ruecker, et al.

Ready to go, but never to return. O son! the night before thy wedding-day Hath Death lain with thy wife. There she lies, Flower as she was, deflowered by him. Death is my son-in-law, Death is my heir; My daughter he hath wedded: I will die, And leave him all; life, living, all is Death's.
speech@speaker: Capulet
speech@act: Act 4
speech@gender: male
speech@scene: Scene 5
speech@play: Romeo and Juliet

Yond light is not daylight, I know it, I: It is some meteor that the sun exhaled, To be to thee this night a torchbearer, And light thee on thy way to Mantua: Therefore stay yet: thou, need'st not to be gone.
speech@speaker: Juliet
speech@act: Act 3
speech@gender: female
speech@scene: Scene 5
speech@play: Romeo and Juliet

Well, get you gone: a' Thursday be it, then. Go you to Juliet ere you go to bed, Prepare her, wife, against this wedding-day. Farewell, my lord. Light to my chamber, ho! Afore me! it is so very late, That we may call it early by and by. Good night. Exeunt.
speech@speaker: Capulet
speech@act: Act 3
speech@gender: male
speech@scene: Scene 5

Items in reader: 15

METHODS

To test the Mandala browser's design, a qualitative usability study was conducted involving eleven human participants. The usability testing consisted of several steps, combining pre- and post-testing interviews, performing research tasks with the Mandala browser and written questionnaires meant to target the affordances of the browser. These data were then analyzed for themes of tool adjustments, requests for new tools, aesthetic responses to the browser and likelihood of using the Mandala as a research tool, among others, as discussed in the results section.

The participants were male and female graduate students from the University of Alberta, from a range of academic backgrounds that included computer programming, web design, library science and eighteenth century women's literature. The qualifications for participation in the study were that they were: 1) actively engaged in scholarly research and 2) currently doing research in full text databases. Participants were recruited through posters and snowball sampling and reflected a diversity of research interests and a range of research experience.

The interviews lasted approximately an hour for each participant. Recordings were made with Morae of the screen activities and the usability testing portions of the interviews, questionnaires were completed on paper and the administrator of the study took copious notes of the pre- and post-testing interviews.

The primary goal of the study was to examine user comprehension and usability of the Mandala interface. Such a usability test would provide the interface developers with valuable feedback on the usefulness of the design concept, the usefulness of specific Mandala features and insight into any learning curve users of the Mandala might face. With those goals in mind, a multi-step qualitative study was designed.

Participants were first given a research habits interview, in which they were asked a series of questions about their research needs and searching activities in using online research tools and resources. Participants were also asked about their current research projects and their research habits. Key questions to inform future directions for developing the Mandala browser revolved around the participants' favorite research tools, avoided and least-liked research tools and speculation on what their ideal, interactive research tools would look like.

Participants were then shown a prototype of the Mandala browser and a sample database of text entries. For this study, full-text from Shakespearean plays were used *(Romeo and Juliet, A Midsummer Night's Dream and The Tempest)* in order to populate the Mandala. This data was shown to participants with dots on the screen representing the speeches in the plays (texts were adapted from the Nameless Shakespeare Collection from Northwestern University). At this stage, participants were given research and analysis tasks (e.g, "Find out which family, the Montagues or the Capulets, spends more time speaking on stage").

Participants were also asked about their understanding of the system, their preferences for the various search tools embedded in the system and predictions of their ability to perform research tasks with the browser. One questionnaire targeted questions of usability (e.g., "How strongly do you agree with the statement, 'I think the Mandala would be easy to use'?"). The other questionnaire targeted questions of affordances (e.g., "Would the Mandala browser be capable of handling the kinds of searches you need to do in your work?").

Finally, a free-form post-testing interview gave time for discussion and amplification of those issues addressed and left unaddressed by the questionnaires. For example, why did some participants struggle with the magnet metaphor? Why did other participants break off their searching activities to start playing with the Mandala and its tools, while others stayed on-task? The multi-staged interview process was designed to try and capture the thoughts and reactions of our eleven participants from practical, aesthetic and playful perspectives.

Comments made by participants were analyzed to assess the viability of the interface from a usability perspective (i.e., discussing efficiency, effectiveness and satisfaction in the user's ability to access information), and to test the appropriateness of the visual grouping approach used in the design of the Mandala prototype. The requests from participants for tool changes and the problems they encountered with the Mandala, gave our developers feedback on technical or programming problems, identified problems with the tagging of the data, suggested changes to the existing tools and recommended new tools to be added. The activities of the participants also brought out an interesting commentary on the use of rich-prospect browsers. All of this is discussed further in the results section.

RESULTS

We group the results of this study into a several categories that relate both to how we carried out the research and to how the findings can inform different aspects of the design of browsing and retrieval interfaces like Mandala.

Participants' search habits

All participants recognized that needed content and good search tools are not always to be found together. Some of the participants will overcome aversion to a particular interface because they are sure a database contains needed content. One participant described how he tries to circumvent one interface by using another to locate the same content: he finds ACM content through Google (instead of the ACM website). Sometimes participants will find another resource with similar content and will use that first; for example, one participant used Library, Information Science and Technology Abstracts with Full Text rather than Library Literature and Information Science Full Text and another turned to Wikipedia instead of the Short Story Index.

Half the participants (6) said the greatest benefits of full text databases and tools are rapidity of searching and convenience. Two said the greatest benefit of full text databases is the way they are able to get a sense of the literature available in the field by using various searching and browsing tools. Three participants named the precision searching possibility in the databases. Other comments included content and the authority of the sources with such features as identification of peer-reviewed articles. One participant, in referring to internet databases and full text resources such as news sites, said he uses them to place himself in promising information neighborhoods.

There were eighteen favorite search functions named by the study participants, which reflected their varying search styles. Two participants said they had no favorite search functions other than a natural language keyword search box and that searching tools were difficult for them to navigate and use. The most popular searching tool (mentioned by four participants) was a good-quality thesaurus. Other favorite functions, too many to list here, included sorting by date, date range limiters, relevance rankings, filtering by publication type, truncation, exporting citations and faceted searching. Only one participant said she had no favorite or preferred search functions of any kind. For those study participants who identified favorite searching functions, there was little to no overlap or similarity between their answers. Each reply was highly idiosyncratic. This disparity in perceptions warrants further study.

The greatest problems the participants identified in their searching of full text databases revolved around the frustrations that occur when participants were unable to access materials contained within the database quickly and easily. Items that brought up frustration were variously identified as: tools difficult to find or understand; having to log into multiple access areas of an aggregate resource (the main library website, the electronic database, specialized resources like Refworks); and issues of display, with a participant saying "it's too much hassle" to follow multiple links to the full text of an article, when the full text should be immediately shown.

Of the ten participants who said that they have recognizable problems in their searching, six participants said their greatest problem when working with full text databases relate to worries about the results found. Whether the concern was about too few results or too many, participants expressed persistent worry that they have potentially missed useful material within a database. They attributed possible inability to source relevant material to: differences in results between natural language and controlled vocabulary searches; the fact that controlled vocabulary in an emergent scholarly field doesn't work; frustration with an inability to find the right keyword; and terms of common use within a scholarly field not being part of controlled vocabularies. Other problems included loss of search history, unclear display of search results leaving a searcher unable to evaluate relevance and identification of the variations in search terms and symbols amongst the databases. One participant's comment was that he wanted simplicity when searching, but recognized that "simple tools don't always work well."

At the end of the pre-testing interview, participants were asked, "what kind of interactive tools would you use if they were available?" While there was little overlap or similarity in the responses to the question about their greatest problems when searching, or in naming their favorite search tools, the answers to this question were immediate, frequently well-developed and contained many of the same themes. Several participants (3) asked for the application of web 2.0 tools for database searching, as seen in this answer: "Tagging. If you could tag articles, that would be good. I'd also like to see better note taking tools in databases to attach to the articles I find. I'd like to bookmark databases with a program like del.icio.us, so that I could just jump back to the article when I wanted to, whatever database it was in."

Participants also wanted federated search tools that would work across multiple databases, which would save, tag and export results and search histories. Alternatively, one participant suggested, the results export tool should tag results with the search terms used to find them and the database they came from. They asked for tools already existing in some databases to become standard, saying "all databases should allow for exporting citations"; that databases should suggest synonyms and related terms when a user is searching a term; and that they should be able to search and filter results.

Participants also suggested some new innovations, such as the visual clustering of results, visual representations of how the theoretical fields, authors, journals, etc. related to the articles retrieved, the ability to make notes within the system that are saved under your user name and the ability to develop your own subsets within your search results.

When asked about what their ideal search tools would look like, one participant ended his description of ideal tools with pessimism, saying "it [the database] only works the way it works" and that he didn't see how database tools could change. Instead it was up to him to accept that searching can be a long process and that you can miss finding relevant material within the databases.

Task events, processes, interpretations

The Mandala was designed as a possible solution to the difficulties some people experience when conducting Boolean searching. Hypothesizing that one factor might be attributable to the syntax of a search, the Mandala's system of magnets was developed to provide a visual syntax for developing search queries and seeing results. Each magnet is given a single value (e.g., a name, concept, place, expressed by a single word) by a user; connecting magnets are generated by the system to identify the subsets of items that fall between primary magnets. In this way, the highly specific language of a Boolean search is circumvented. However, it emerged in our study and is confirmed by literature in Library and Information Studies (Salton, Buckley, Fox, 1983), that the difficulties some experience when building Boolean searches is not so much about syntax, but rather about the ability to break a searching need into component parts—the logic behind the syntax. Four of our participants had difficulty with the more complex tasks given to them, as seen in the quotation below. The task assigned was to search for the themes of 'night' and 'day' in the first act speeches of the collection *(The Tempest, Romeo and Juliet and A Midsummer Night's Dream).*

Carla: "So we want...speech...night and day [typing in 'night and day']. And I think—I don't think that it's—like these three boxes [referring to the complete left hand search panel on the screen], I don't know if—like I don't know when I should, I guess I don't really understand how this thing's organized,

so when there's more than one task that I need to do, I don't know if they can be all-inclusive, like should I be searching more than one play at a time, or should I be searching a theme at a time?"

It soon emerged that our participant (Carla) understood that the three plays were in the Mandala and available to her. Her difficulty lay in breaking the search into 'Act One,' 'night' and 'day,' as the basic elements that could then be assigned to magnets. Three more participants exhibited similar difficulties in their searches.

A more common problem during the tasks was difficulty in remembering the order in which magnets were loaded and assigned values. Within the Mandala, the user is required to click on the button labelled 'Add Magnet' to add additional query terms (the first magnet appears by default); then the user is able to assign a value to that magnet. Nine of our participants had difficulty with this, and specifically requested a change to the order of the add magnet to make it so that value would be entered first and then the user would click on 'Add Magnet.' One user said his difficulties occurred because he wanted to treat the magnet "like a search function," clicking the 'Add Magnet' button in the way that another interface might require the user to click 'go,' 'search' or 'enter.' Another user seemed to summarize the general reaction to the magnet value entry order when she said, "I find it annoying." Two participants had no difficulty with the magnet order and seemed to adapt to it effortlessly.

An essential part of success during the searching tasks with the Mandala lay in understanding the visual displays built by the searches. The visual display seemed easy to understand for all participants, who were able to correctly interpret their findings. Some participants experienced some minor confusion over the fractions displayed by the system (these fractions indicate the number of items matched solely by a magnet versus the number of items matched by several magnets) and over the magnet metaphor, but this confusion did not keep them from correctly explaining the results displayed by the Mandala *(figure 2)*.

While aesthetic responses were not always positive (one participant's first response was to say that it looked "a little freaky"), the only confusion or problem with interpreting the results was if a participant had used the field 'any' instead of 'speech' when building a search (each item has multiple fields, such as 'speech' and 'speaker' or the user can specify to match values from any field). If such a mistake did occur in the building of a search, the visual display seemed to make it readily obvious to the user and such mistakes were quickly rectified. The one qualifier, however, mentioned by three of our participants, was that they had noticed problems in the coding of our data during the searches (one search had been set up to point to such possible problems, but only three of the eleven read the text-based results closely enough to notice it) and as a result they qualified their interpretations by alluding to the possible untrustworthiness of the data.

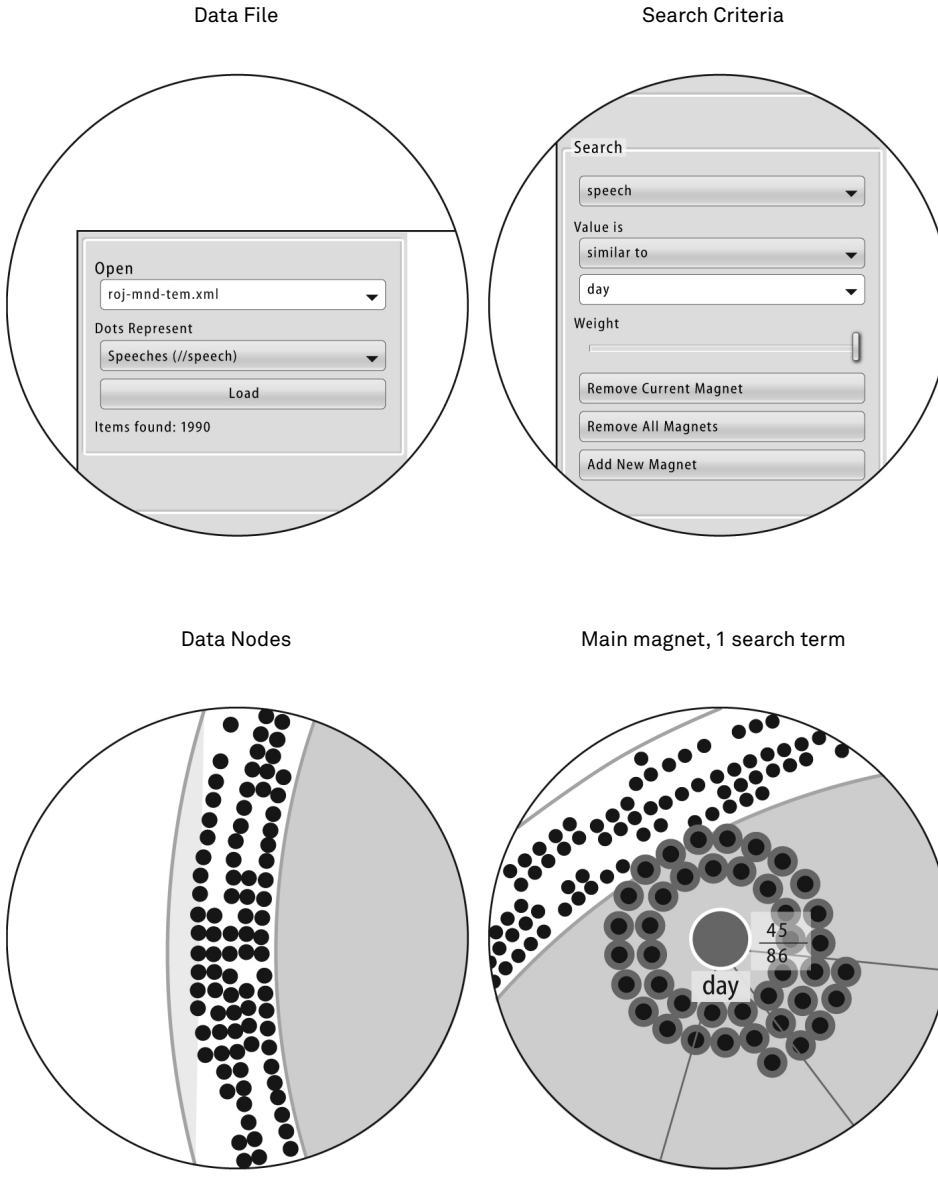
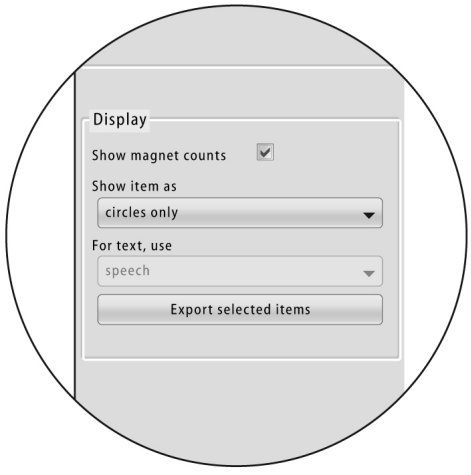
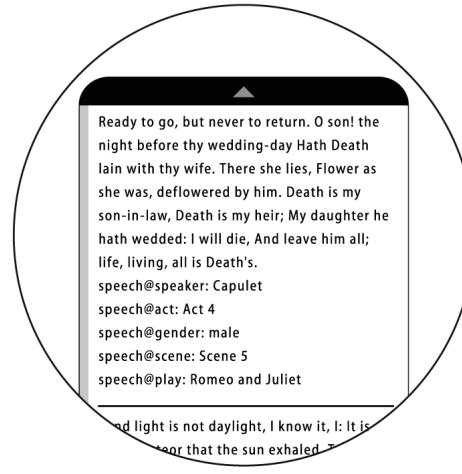


FIGURE 2.
An advanced task completed by one of the study participants using the three Shakespearean plays in the data set. Here primary magnets have identified speeches given in the first scenes of the plays, speeches that contain the word 'night,' speeches that contain the word 'day' and the joined magnets generated by the Mandala show those speeches that contain two or more of those magnet elements.

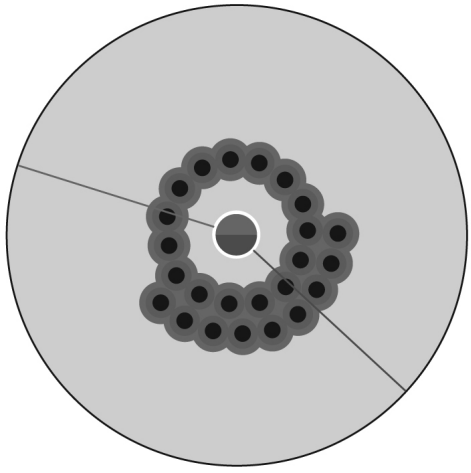
Display Options



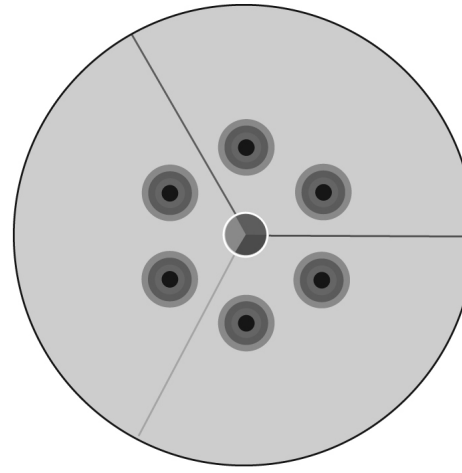
Text Reader



Joint magnet, 2 search terms



Joint magnet, 3 search terms



Requests and Reactions

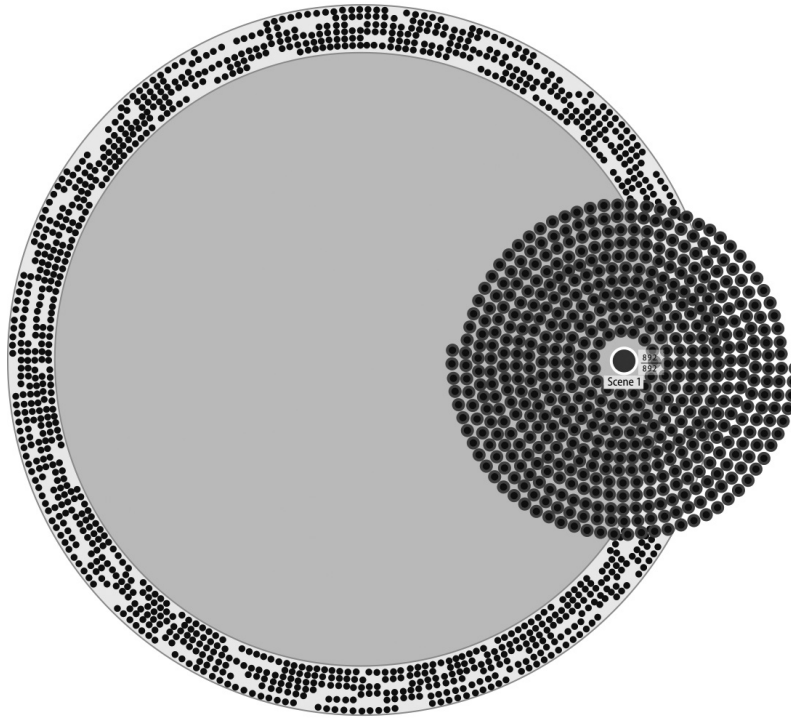
As the participants performed the study tasks, they verbalized some basic reactions to the Mandala, as well as some requests. These requests included asking for some improved searching functions and the implementation of some standard search tools seen in other interfaces. The reactions of the users to the Mandala metaphor, its appearance and its animation were varied, although most of the Mandala users showed a willingness or interest in experimenting (even playing) with the display.

All of the study participants had requests that reflected their desire for improved searching tools within the Mandala browser. The primary improvement was the 'add magnet' order, as already discussed. Other features that users thought would improve the Mandala included changing the language of the field and value entry boxes, since the Mandala had used some cryptic language for those features (reflecting the complexity of the underlying XML syntax), for example, 'speech@play.' 'speech@gender.' They also suggested adapting the magnet weight tool, which was designed to allow users to visually move the location of items drawn to a magnet, even so far as temporarily turning off the magnet altogether without removing it entirely. Participants felt it might be more useful as a relevance ranking tool. They also requested that we add the ability to click and drag results out of the Mandala and store them away from the active screen and that we also introduce a way to store search histories.

Participants also indicated that the relationship between the visual display and the side panel text-based display needed to be shown in some way. In the screen shots provided of the Mandala, each speech in the three plays is represented by a dot with these dots attracted by magnets. If any of these dots are selected, the speeches represented by the dots are shown in text form in the right hand results panel (which allows closer inspection of the items). However, which dot represents which speech in the results panel (or, conversely, which speech is represented by which dot) is not shown. It became clear that participants wanted such a relationship to be displayed in some way.

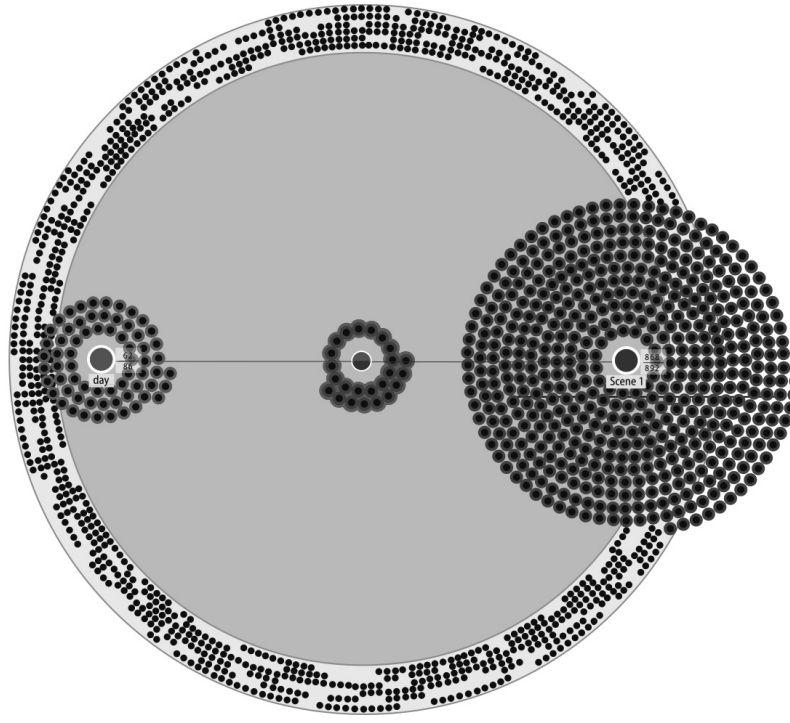
Adaptable display features were also requested. These features included the ability to enlarge fonts, the ability to magnify the display (for a further discussion of affordances, please see further on) and the possibility of exporting images of the Mandala's visual display of search results (what is contained within the Mandala circle only), as a recorded version of a search history. Most participants liked the colorful display of the Mandala, but another adaptable display feature requested by three of the participants is the ability to assign colors to the magnets. One participant pointed out that users with color blindness would like and perhaps need such a tool; another said she has her own color ranking system that she likes to use when doing research, in order to code her results.

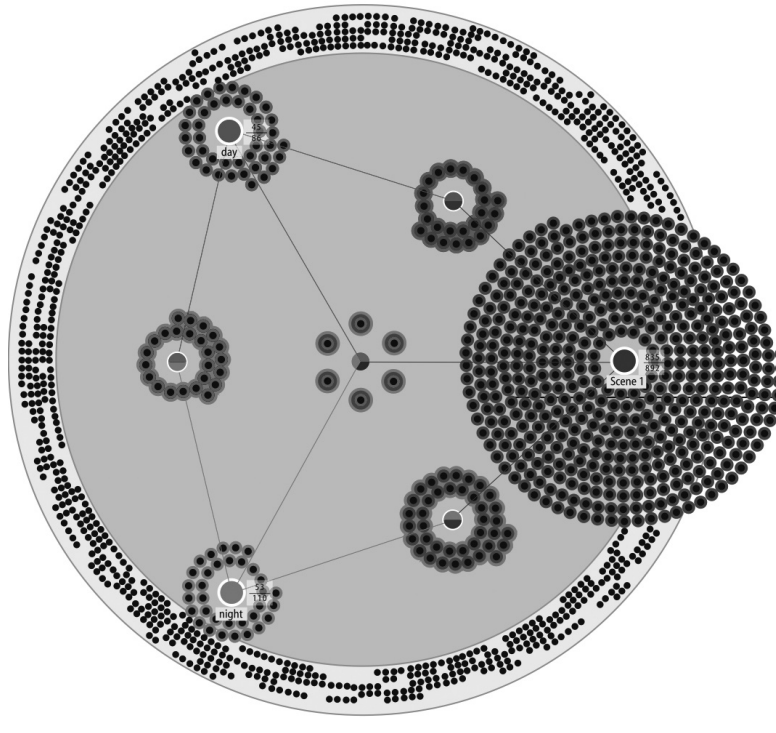
There were also requests that searching tools commonly available in other interfaces be made available in the Mandala browser. These tools included a help feature to better understand system affordances, better tools for the results panel, such as deletion of some results while saving others and that the system should pop-up suggestions for the searcher as field values are typed in. Interestingly, a couple of participants thought that the suggested values provided in a drop-down menu were someone else's search history. Seven of the eleven participants asked for better formatting in the results panel: the way it was set-up, it was breaking words, was small and difficult to read and there were not enough values displaying—for example, the information denoting where the speech is located in the play (act, scene) was not always shown.



Adding magnets, 1, 2 and 3 search terms

FIGURE 3
Selected details from the interface show how the user sets up a search and sees the results both as a visualization of magnets and dots and also in the text reader.


day
Scene 1


day
Scene 1
night

Reactions to the Mandala in terms of its conception (the metaphor, its possibilities, appearance and the desire to play with it) during the tasks were varied, so varied that it becomes impossible to generalize about whether it was liked or disliked. Some liked it, and some did not, while others were neutral. Three participants could not understand the magnet metaphor used in designing the Mandala. One participant went so far as to say that she was not 'scientific' and did not understand 'the science of magnets' and as a result could not understand the basic principle of magnetic attraction within the Mandala. Several participants also asked questions, when the tasks were finished, about possible uses of the Mandala, having difficulties seeing how it could be successfully applied in research situations. Two participants were enthusiastic about the Mandala's visual design, while one participant disliked it. Another participant called the design 'wasteful,' because of all the white space that will surround a circle displayed on a rectangular computer screen. That white space, he said, could be usefully employed. Another participant wrote on her questionnaire that she liked the clean display provided by the white space. Only one participant disliked the animation, saying that the dot movement while she was typing was 'distracting,' while another participant loved the animation as terms were entered, explaining that she has had problems with spelling all her life. This was the perfect tool so that she could check her spelling as she searched, recognizing that if she misspelled a word while typing it, the dots would move back into the outer ring of the Mandala.

At the end of the tasks, participants were invited to play with the Mandala. Almost all of them did so. Three of the participants voluntarily started to play with Mandala in the middle of tasks, ignoring the tasks set them by the interviewer, instead feeling compelled to explore on their own (please note this does not include any exploration or play done at the introduction of the Mandala or during the first task, when some participants needed to explore the tools in order to understand the system tools). Such play seems to underscore the responses of users to rich prospect browsers, which are designed to provide affordances for undirected interaction.

Questionnaires on Usability and Affordance Strength

Following the tasks set with the Mandala, participants were asked to respond to two questionnaires, one of which related to usability, and the other to affordances. While participants seemed positive about the helpfulness of the animation, they found the Mandala potentially difficult to use and were uncertain as to its potential usefulness. As has already been discussed, reactions to the visual appeal of the Mandala were divided, with rankings from respondents ranging from very positive to very negative, finally averaging out on our scale of 1 (strongly disagree) to 5 (strongly agree) at 3.5, neutral to mildly positive. Participants did not find the Mandala easy to use, nor did they believe others would find it easy to use, frequently commenting that the

Mandala was not 'intuitive' and that the format of the Mandala would appeal only to 'users who are visual learners.' Their comments included "not super intuitive," "it's very cool, but I struggled at first" and "it really depends on individual learning styles."

Despite the belief that the Mandala would be challenging to use, some participants (7) agreed that the Mandala could be helpful when searching full text databases. "I like being able to see the entire data set....I often suspect I am missing important components simply because of structural blindspots." There was near-unanimous agreement (8 participants) that the animation of the Mandala was helpful in interpreting results, although their comments indicated that the participants did not find the movement as immediately intuitive as we would have liked. For example, Carla commented, "Although the animation was visually appealing, it took several minutes before I understood what it meant."

The affordance strength questionnaire was developed to address the system's ability to convey its possibilities to potential users in relation to their needs. The components of a person's perception of the strength of an affordance are: awareness – the potential of the object is perceived; motivation – the need for and then seeking out the object: ability – building on awareness and motivation, the ability of the perceiver to recognize and use the object; preference – deals with established preferences, such as aesthetic preference; and contextual or agential support—sources of assistance in using the object (Ruecker, 2006).

Responses to the affordance strength questions varied widely. Two participants gave the Mandala very negative reviews, yet two other participants were very positive about the possibilities of the Mandala browser in their work. Other participants fell into the middle of the spectrum. As an example of these divergent viewpoints, in response to the question, "Would the Mandala browser be capable of handling the kinds of searches you need to do in your work?" Thea wrote, "probably not....the Mandala lacks the precision that I need," while Anthony wrote, "If it could be adapted to novels instead of drama I would use this at the beginning of every project if I could find patterns or reinforce my idea that they exist. This would really be useful in a project like my thesis where I'm studying a theme across 6 different novels." The responses indicate that we need to develop the Mandala search functions to make them more intuitive and flexible.

SUMMARY

To sum up, basic reactions included a liking for the color and animation and the layout. The users also demonstrated a willingness to play and a belief that the visual display is a valuable aid to understanding the content of the database and the results of their searches, which indicates that the Mandala is appealing to use. However, users appeared lukewarm to mildly negative in their belief that the Mandala can be a useful tool to them in their research, suggesting that we may need to provide further help, training and examples. Participants indicated that they want increased flexibility in searching and results display; that tools need to be added to and improved, including relevance ranking, expanded search features, better sorting of results and customizable screen features.

A couple of fundamental problems with the Mandala design were exposed that will require more thought and study, namely a) the use of search function: difficulties breaking down tasks, order of adding magnets and defining what they represent, the limit on the number of possible magnets etc; and b) the magnet metaphor: difficulties understanding it, problems with the weighting feature and trying to visualize applications for this tool while researching in full text databases.

Qualitative small scale studies can provide serendipitous discovery of information that can enrich projects in surprising ways. The responses of participants to questions about their ideal search interfaces, for example, gave us food for thought as we considered how best to develop the Mandala's effectiveness as a searching tool. This study, despite the small sample, has illustrated again that rich prospect browsers can be useful in encouraging people to explore collections. Furthermore, it has demonstrated not only further support for the contention that the difficulties in Boolean searching lie in cognition and logical thought rather than syntax (Salterton, Buckley, Fox, 1983), but also that the process of searching is as idiosyncratic as learning and thought processes: one participant is a visual learner who recognizes and builds on patterns and likes the visual display of a rich prospect browser, while another cannot bear the disciplined thought required by any kind of Boolean searching, but instead prefers the serendipity of a natural language keyword search and considers the precision of other search tools confining and frustrating.

The results of this study will be used to enhance our understanding of online information browsing activities and provide valuable data for creating improved computer interfaces to support effective use of complex software tools for collection and document analysis by scholars. The next iteration of the Mandala browser is already in development, taking into account the feedback we have received from this study.

ACKNOWLEDGEMENTS
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AUTHOR NOTES

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BOOK REVIEWS

The Designer, half a century of change in image, training and techniques
Rosemary Sassoon

Bristol, UK: Intellect Books, 2008
ISBN 978-1-84150-195-6
Softbound, 144 pages, some illustrations, $30.00

It is not often that designers take the time to look back as they are typically looking forward. But Rosemary Sassoon in The Designer sought to reflect on decades of change in design in terms of both education and practice. Her reflections are based on her experiences in the United Kingdom but much of it is consistent with design experiences in the United States and elsewhere. She was not formally trained in design in a design school or university setting, but picked up skills through informal courses and work experience. This was typical during the forties, fifties, and even the early sixties. Formal education in design commonly began in the U.S. in the 1960s and the fit to university structures has been on a continuum from awkward to well integrated, unfortunately with more programs on the awkward end.

It is dangerous to open the door to discussions of the relationship between practice or industry and educational preparation because there are many ways to consider economic practices (industry) or goals for learning (education). What is critical in such discussions is to understand the present context for design, culturally, technologically, economically and socially and to recall that the previous decades were different. It is easy to romanticize the past and dwell on favorite courses, teachers, experiences that today might seem out of touch or inappropriate.

One issue that permeates the book is the role of the hand in developing visual sensibility versus the computer's ability to generate (with some help from the designer) endless variations from which to choose.

Technology has touched our lives in extensive ways, allowing us to develop ideas that were formerly either impossible or accomplished only with extreme devotion and time. Discussion revolves around how compressed time is now and where the designer focuses creativity. Sassoon is well known for her writing/calligraphy work and her research into dynamic writing problems. She is concerned with hand skills.

The first section of the book discusses her early years as a designer – her struggle to find her place in the design industry. The last section of the book explores later years and the circuitous paths that determined her focus and accomplishments. Between these sections is another where she invites other authors to reflect on their experiences. Jorge Frascara, an Argentine who has spent his most productive years in Canada as an educator, gives a lucid account of his growth in design understanding and the changes this brought to his teaching and practice. Sharon Poggenpohl takes a more abstract approach and discusses contextual changes in process, media, research and teaching in the United States and more recently in Hong Kong. In the Australian context, Paul Green-Armytage discusses teaching along with his best practices and the importance of a relevant connection to industry. He postulates some future directions for design education that are worthy of further study. Neil Barnett and Darren Raven, both at the London College of Communication, reflect on group-based projects with an industry connection and whether such projects provide better preparation for entry into design practice. What emerge from this is the competing agendas of teachers, students and industrial partners.

The book provides no answers, but it does provide stimulus for thinking about the current context in which design practically operates and the learning goals that support a challenging and productive life in design.

Visual Thinking for Design
Colin Ware

New York: Morgan Kaufmann, 2008
ISBN 978-0-12-370896-0
Softbound, 197 pages, color illustration, $39.95

'Active vision' is the new approach to understanding perception – what we create as designs or communications are cognitive tools. The diagrams, signs, images that we externalize to think with and their apprehension is, according to Ware, "...a kind of dance with the environment with some information stored internally and some externally and it is by understanding this dance that we can understand how graphic designs gain their meaning" (p. x).

The author has advanced degrees in computer science and the psychology of perception and directs a university-based Data Visualization Research Lab. His background sets the stage for a thorough and understandable exposition on the relationship between visual perception and design. Visual thinking is about the allocation of attention – selective attention based on immediate goals.

We can now begin to develop a science of graphic design based on a scientific understanding of visual attention and pattern perception. To the extent to which it is possible to set out the message of this book in a single statement, the message is this: Visual thinking consists of a series of acts of attention, driving eye movements and tuning our pattern-finding circuits (p. 3).

In general the chapters cover visual physiology and perception, citing psychological experiments now and then, but tying the concepts and principles to design through small graphic demonstrations. Design basics like form, color, orientation, contrast, etc., are viewed from this more science oriented perspective, revealing how they guide visual search activity and provide cues for attention.

Demonstrating the relationship between perception and basic graphic design is where the author is comfortable. Later in the book, when he discusses meaning and emotion or imagery and desire, he is on less substantial ground.

This book can serve as a sophomore text for students of graphic design. Basic perceptual understanding can enhance their form making and decision skills – it can even give critiques a more solid focus. Perception underlies all design activity and making it plain is a service. This does not eliminate creativity or aesthetic sensibility. Active vision happens in many ways. For those who chafe at the idea of a science of graphic design _ understanding visual perception will not be a crutch or substitute for sensitivity, instead it will enhance design performance.

When Writing Met Art—from symbol to story
Denise Schmandt-Besserat

Austin, TX: University of Texas Press, 2007
ISBN 0-292-71334-7
Hardbound, 134 pages, black and white illustration,
$45.00

While art predates literacy, Denise Schmandt-Besserat argues in this book that systematic aspects of early writing influenced the development of a pictorial language capable of story telling. Further, the influence went in the other direction as well, cultural functions of art moved early writing from its accounting origins to representations of people's identities and the names of deities and temples as represented phonetically. Regarding the mutual impact of writing and art she states (p. 1): "Art became narrative and writing went beyond accounting to become a comprehensive medium of communication."

Following in the tradition of Walter Ong and Jack Goody and their emphasis on the role of writing in cognitive development, the author sifts through the existing evidence, looking for patterns that reveal changes in writing and art and their possible influence on each other. She notes that the evidence is often spotty and difficult to accurately date, while she ferrets out clues from her own observation of the material evidence and the ideas and opinions of other scholars. She examines and discusses in detail evidence from a variety of visual forms – wall paintings, seals, pottery, stone vases, stele and votive figures. Her careful examination together with her historical knowledge of Mesopotamia is evident.

Regarding the influence of writing on art, the author has analyzed the importance of syntactic elements like base line, symmetry of arrangement, size and shape, and how such patterns translate into art. She finds a similarity of reading process for a glyptic scene and cuneiform writing and demonstrates the shared structures by comparing an Uruk vase composition (figurative art) with impressed tablets (writing). Differences in representation and interpretation from the pre-literate period with its high stylization and repetition of form to the literate period with its differentiation, hierarchy, detail and orientation to action, support a change in interpretation from evocation in the former to narration in the latter. Thus she concludes that visible language and visual language influenced each other.

The argument and evidence presented are scholarly, but the book is accessible to the layperson as well. The analyses, visual demonstrations and comparisons serve to deepen understanding of what are often seen as opposing representation systems for communication – their interrelationship is the focus of this book.

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SINCE 2005

As you know, Visible Language is interdisciplinary with a strong focus on design, art and language use as it is visible. The following four special issues demonstrate Visible Language's breadth and its international character. Did you miss them? Contact Carrie Harris (charris@risd.edu) to order.

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UPCOMING DOUBLE SPECIAL ISSUE:

GLIDE: GLOBAL INTERACTION IN DESIGN

WAKE UP WEST!

Technological, educational and social innovation in design research is occurring worldwide. On October 22, 2008 Rensselaer Polytechnic University in collaboration with the AIGA (American Institute of Graphic Arts) successfully launched its first virtual conference on global interaction design. Some American design educators and practitioners became acquainted with the work of some designers from Australia, Italy and Taiwan without leaving their studio or office. Now *Visible Language* has invited design researchers worldwide to reflect on the possibility of virtual conferencing and the difficulties of cross-cultural design, communication, virtual participation and more.

HOW'S YOUR CARBON FOOTPRINT?

Do you travel to conferences and meetings, and try to tie side-trips to them for efficiency? Virtual conferences and meetings will, by necessity, become more common. Yes, face-to-face is often best, but when is it necessary? *Visible Language* partners with GLIDE to explore the concept of virtual conferencing as a viable option for the global dissemination of new knowledge in design and to explore cross-cultural and technical issues of global collaboration in design. Two formats will talk to each other: Visible Language as print meets GLIDE wikis. What does each do best? How do they relate?

The Call for Papers drew a significant response so a double issue is in order. Audrey Bennett at Rensellaer Polytechnic, the impresario behind GLIDE, will guest edit the special issue, *Visible Language* 43.2/3, coming in October, 2009. Don't miss it.