

Visible Language has been concerned with research and ideas that help define the unique role and properties of written language. A basic premise of the journal has been that writing/reading form an autonomous system of language expression on its own terms. To this must be added research and ideas that help define the presentation of information within the digital arena. The shift from page to screen is comparable in its significance to the shift from manuscript to print. Developing the knowledge base and conventions for this new media will take time and challenge our ability to move beyond the book and into more fluid, relational and responsive systems of presentation.

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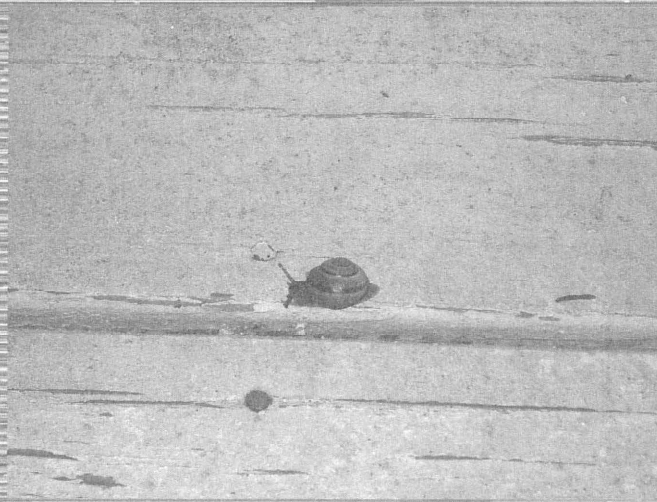
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**Limits of Language,
Limits of Worlds**



DIETMAR R. WINKLER**Biography**

Dietmar R. Winkler is professor in the graphic design program at the School of Art and Design of the University of Illinois at Urbana-Champaign. In his career, he has been combining professional design practice with the teaching of design and communication subjects. His interdisciplinary interests are to expand traditional visual and form literacy to include user-based design in behavioral, social and cultural contexts. Previously, for twenty years, he was a faculty-member of the Design Department and an adjunct faculty member in the cognitive science program of the Psychology Department at the University of Massachusetts Dartmouth. He has written on design education and communication issues with his articles appearing in publications of AIGA, ICOGRADA, *Visible Language* and *Design Issues*.

Abstract

"Limits of Language, Limits of Worlds" sets the stage for the articles that follow. It gives the general rationale for the discussions that formed the impetus for the selection of subjects for papers which include the inherent limitations of expert languages, the need to integrate visual literacy with all literacies that make up a language and its culture, the need for a vibrant cross-disciplinary discourse and the need for exploration of the relationship of theory to practice.

"The mediating link between theory and practice, is the human essence – grounded in human feeling, experience, and intersubjective agreements that cannot be 'universalized' in the logic of the formula."

Richard T. Dyrø, Semiotician, *Life as a Process of Learning*, 1982

Introduction

The topics for this issue emerged in what one can consider a unique experiment for a beginning academic interdisciplinary discourse. During past semesters the focus of a seminar was to establish an understanding of the differences between the visual literacy competencies needed for machine vision and the production of communicative art objects. A group of researchers in masters and doctoral programs of various disciplines in the arts and sciences at the University of Illinois at Urbana-Champaign shared this common seminar. It was moderated at times by Seth Hutchinson, faculty member in Electrical and Computer Engineering at the Beckman Institute, and two faculty members of the School of Art and Design, Len Singer, professor of industrial and product design and human factors specialist, and Dietmar Winkler, professor of visual design. Participant backgrounds ranged from specializations in communication and advertising, graphic and industrial design, studio arts and art education, and (electronic and time-based) narrative media to psychology and robotics.

There was a natural crossover between disciplines, and the diverse group shared its sources, among them Nelson Goodman, Ernst Gombrich, Rudolf Arnheim, for example, as well as texts on perception, optical illusion, optics, neural nets and other related sub-

jects. Certainly, there was awareness of issues in perception and communication framed by the behavioral and social sciences, but it seemed as if the expert languages of robotics as well as art considered these external and not central to either the making of art objects or to machine vision.

Theory and Practice

From the very beginning it became clear that theory and practice in art are separated to such an extent that the principles of form making, although applicable and useful to the practice are finally not a measure of either uniqueness, quality or communicative effectiveness or impact, with the result that even if all principles are properly and correctly applied, the communication may be anything other than useful or functioning or a unique and compelling aesthetic statement.

In Umberto Eco's vision the universe is made up of chaos and cosmos, of understandable order and of natural, and for the present moment seemingly confusing and not comprehensible, disorder. To combat this destabilizing and debilitating "chaosmos," each discipline has organized itself around specific theories that at least for a short time harden the elasticity of knowledge so that they are enabled to anchor application and implementation in practice. Because of the internal struggles for supremacy, all disciplines are notorious for their inability to share knowledge with another.

While an interdisciplinary network is needed from which a multifaceted view of the same world can emerge that is less stilted and segregated, the specialist is ignorant of other branches of knowledge. Finally the specialist is utterly incapable of forming a judgment on the role and importance of his own knowledge within the context of human knowledge and culture. Jürgen Habermas identifies the "professional expertise complex" as a danger and without broad critical thinking skills, yielding each succeeding generation of professionals so entrenched in the execution of their professional roles that they are ill-equipped to have a wider critical view of the world. The social consequences of the political and economic structures served and maintained by professional experts are never examined and critiqued.

In each discipline, theory and practice may be intended to collapse into one another, but in most instances they do so only partially. They are rarely seamlessly interlaced because of the broad strokes and the disciplinary isolation in which theory is developed. Perhaps theory should not be considered as a direct pragmatic support for the innumerable variables that crop up in everyday problem environments. Each issue may be unique in itself even though it may relate distantly to the core of a theory. Theory may serve best as a catalyst for an ongoing dialogue to energize areas of both theory and practice.

In design for example, the flow of the process is frequently described in very abbreviated ways as moving through clearly defined sequential stages, namely from design research and conception through design development and implementation to design production and user testing. The model makes sense, but can only be applied in broad strokes. Depending on the circumstances and

needs of individual projects, research and user testing may take place throughout all phases in an iterative process in which cycles recur and tasks repeat. The model may seemingly have a linear structure when in fact, in its unfolding, it is a web of interactions that depends in its complexity on the equally intricate quality of inquiries that have to be fulfilled, the time frame in which a solution has to be found and the budgets that are available for either a thorough or superficial solution.

In the same way, Shannon's model of the communication process is correct in its description of the technical aspects of a typical flow of measurable thermal dynamic information (message: encoding, sending, noise, receiving, decoding). His model was expanded way beyond his intentions by the advertising industry which used it to its advantage, even though it has only direct bearing on the technical part of communication, not on the context related contents of the messaging process or the behavioral, social and cultural makeup of the reception, response and resulting action.

Many additional aspects have to be included to make his model truly functional in communication and advertising: the determination of the context and the need for a message, the configuration of the demographics for the receivers (primary and secondary readers), the selection of visual, textual, aural and tactile modes of encoding, the sophistication of metaphors embedded in the narratives that frame and elucidate the message, the modes of reinforcement, reiteration and support of the core concept, the variables of immediate and delayed comprehension and the various modes of response and action to a message. In this interdisciplinary crossover model, noise is not only the technical interference with a message, but it is any interference

or distortion whatsoever, including value shifts in the political, social and economic climate.

Another difficulty arises in that theories are adopted by loyalist camps that take concepts developed in disciplinary isolation or in different competing segments of the same discipline and create myopic political stratas. The understanding is further obscured by institutional and national competition and it is practically out of reach of a practice which buys into the trend of the day. A good example from psychoanalysis is the pitting of Sigmund Freud's pioneering ideas against Carl Jung's further explorations. These are reconciled in the theoretical arena, but rarely by the practitioners who make clear and irrevocable distinctions between their colleagues as Freudians or Jungians.

In the arts, even though there has been a traditional philosophical separation from science, as part of the academy, each segment (fine and applied, visual and performing) had to begrudgingly adapt itself to a certain degree to the scientific method, in which knowledge starts from the concrete and is raised to general propositions through a process of induction. Theory in the arts is looked upon as providing a hold on mastery and therefore control of the practical environment of professional behavior. The correct but narrow observations regarding the function of form have evolved as starting points for theory, but must include a much larger range of issues that are addressed outside of its confinement by the behavioral and social sciences.

One of the major issues in machine vision is the current inability for robots to recognize and understand the dynamics of contexts. They recognize shape, form, color or location, but they are unable to do more in their inter-

pretation than furnish quantitative and physical relationships. At this point, machine vision is unable to distinguish between emotionally dynamic or charged objects or images. Therefore, the question emerges, would the established visual language of object and image makers help in overcoming that hurdle? It turns out that the language and principles of the arts show the same inability to deal with contexts. Contextless, void of both social and behavioral foci, the artistic language, mostly codified in the twentieth century, uses some scientific methods to establish a working taxonomy, very much like computer vision. But it deals only with what is physically seen, ignoring the interpretation of the viewer/critic who defines the context through personal knowledge and experience. Because the image and object making language evolved in isolation from the behavioral sciences, its axioms are unable to support communication beyond the direct analysis of the physicality of objects and images. Using a semantic differential, establishing opposites, it can declare what something is or is not. The critique can only be about the pragmatic. The semantic and syntactic evaluations are externally housed in other disciplines like philosophy, rhetorical theory and literary criticism, or in the life experience and value system of a viewer. Only in the dialogue with audience and critic does the context emerge.

Lester Loschky in his paper "Some Things That Pictures are Good For" suggests that people are comfortably confident with their sense of awareness of their immediate surroundings at any given moment. But psychological studies on perception over the past decades have come to show that the visual experience they study is in fact quite limited, bearing out Arthur Köestler's conjecture that most common human experience is

quickly dispatched to the unconscious. Humans are rarely cognizant of how little visual information they are able to take in or hold onto. The paper explores the limits of visual attention at any given moment which limits the possibilities of experience. It also addresses the issues of severe spatial limitations in visual resolution in which only small regions of the visual field are rendered in the greatest fidelity and detail, while the periphery is degraded. It also deals with the limitations of visual short term memory.

Form Languages and Their Limitations

The most obvious mission of visual language is the representation of the physical world. Visual language, taught to establish form for objects and images at art and design schools, is one small part of the complex visual communication literacy system. But objects and images are not independent from belief and value systems, from status and hierarchy or from emotional conditions. As soon as the concept of form is expanded beyond the physical into contents and context, behavior and experience, then it becomes obvious, that this form making language is incomplete. It is a one-way expert language, made for the maker, aloof and often indifferent to the audience. That is why image makers do not really know how images work. They are released to the public with an assumption of effectiveness based purely on the personal experience of the maker, who rarely comes in contact with the audience. Art historians and philosophers have focused primarily on aesthetic issues. Aesthetics is a vital part of the language of art, but because of its extreme changability over short periods of time, setting new trends and building new canons, it does not reveal a dependable system with which to deal with either

the making or the interpretation of form in the environment of daily communications. That is why the arts can benefit from the contributions of social and behavioral scientists.

In the long history of shaping the formal rhetorical system of verbal dialogue and discourse, the understanding of how text functions has found more researchers. Also, in the traditional power battle between the rhetorical systems of the visual and the verbal, the visual is still wide open for exploration, while the verbal arena, through its compilation of analytical methodologies over centuries, provides a strict or at least more defined canon that has evolved to establish a communication taxonomy.

We know for a fact from the social and behavioral sciences that the larger portion of the visual communication process in the daily affairs of people is outside of their conscious awareness and that it is dynamic — that what is seen and interpreted is context based. The strongest support for open-ended investigations of visual languages has come from outside of the arts, from anthropologists, behaviorists and sociologists. In the emerging paradigm of visual literacy the findings of the social and behavioral sciences play a major role in reforming the narrow language of art. In the same ways in which contemporary biologists and physicians see the human holistically, brain and body not separate from the neural sensing system, they have introduced holistic views of communication which include behavior sustaining or stimulating contents and social and cultural contexts. The other advantage is that they do not single out one sense over another, sight over hearing or touch, and therefore allow a glimpse at contextually linked communication in which all senses under certain conditions render the most efficient communication results

to sustain the individual as well as the larger societal structure.

Psychologists have provided one of the underlying sciences for communication, namely the understanding of gestalt and how it builds order on one side, but on the other creates the impetus for the individual to embrace an emerging concept, object or experience or to reject it. In the arts, "form" was originally coined to build the analytical taxonomy for the physicality of works of art, design and artisanry. This word has expanded in its meaning, as synonyms for form make clear. Configuration, contour, figure, form, outline, profile and shape, refer to distinctive appearances in the construction of details as well as whole objects and images, but now are also used to define concepts and ideas, experiences as determined or established by their boundaries and enclosing lines, conceptual frames and most importantly their underlying structures and grounding of a conceptual proposition. Configuration looks at the organization and flow, while shape establishes the existence of three dimensions. In psychology, the German word "gestalt" for the concept of form was added by the Viennese. Gestalt psychologists, by expanding the concept of form, opened the door to explorations of organic, physical, psychological and symbolic configurations of properties that configure unified wholes, whose qualities and identities cannot be anticipated or derived from their original and separate parts. Gestalt is the phenomena that help reveal realities that are greater than the simple sum of their parts.

A comparison of expert communication languages in art and design reveals that if a semiotic triad is applied to the modernist's discussion of form, then it becomes obvious that artists and designers address primarily the prag-

matic and occasionally the syntactic. They operate with a mechanistic, technical system of object and image making principles in which form is put together for visual statements. Rarely is the semantic dimension used. In such mechanistic approaches, there is little understanding of cross cultural value systems or knowledge of the ability for the individual or public to absorb the visually encoded message.

Two Examples:

1

The Japanese Purpose, Idea, Material, Hand

In Japan, the conceptual framework for discussing form/gestalt is at the center of its creative spirit or aesthetic that manifests itself in architecture, visual and performing, as well as in fine and applied arts, literature and poetry. Because of its innate complexity, the outline of what it includes or excludes cannot be clearly defined as it is indeed a living language organism that defies permanent definitions. One can hint that the form/gestalt derives from the observation of its place, climate, history, traditions and ceremonies that have evolved and have formed themselves as an unconscious language aspect of the contemporary psyche of Japanese society. Climate, the topography of the land and its relationship to oceans and its position on the hemisphere begin the outline, but additionally, many sources influence a system of filters to establish cultural values. Only those filters make assessment and critique possible. They prepare the statement of quality and excellence.

The Japanese aim is toward a purpose that is not necessarily in the public's immediate experience, but that in its outcome must be convincing enough to justify an expenditure of time on both

Yuichiro Kojiro's Japanese Form Taxonomy

- 1.00 Forms of Unity**
- 1.10 Forms of Continuation**
- 1.11 Forms of Continuation
- 1.12 Forms of Expansion
- 1.13 Forms of Openness
- 1.14 Forms of Dilatation
- 1.20 Forms of Union**
- 1.21 Forms of Tying
- 1.22 Forms of Binding
- 1.23 Forms of Weaving
- 1.24 Forms of Joining
- 1.25 Forms of Bracing
- 1.25 Forms of Matching
- 1.26 Forms of Stopping
- 1.30 Forms of Collection**
- 1.31 Forms of Grouping
- 1.32 Forms of Gathering
- 1.33 Forms of Piling
- 1.34 Forms of Layering
- 1.35 Forms of Heaping
- 1.36 Forms of Bundling
- 1.37 Forms of Tightening
- 1.38 Forms of Grasping
- 1.39 Forms of Felting
- 1.40 Forms of Arrangement**
- 1.41 Forms of Pairing
- 1.42 Forms of Distribution
- 1.43 Forms of Complement
- 1.44 Forms of Surfeit
- 1.45 Forms of Discard
- 1.46 Forms of Scattering
- 1.50 Forms of Enclosure**
- 1.51 Forms of Wrapping
- 1.52 Forms of Enclosing
- 1.53 Forms of Enclosure
- 1.54 Forms of Encirclement
- 1.55 Forms of Concealment
- 1.56 Forms which Cover
- 2.00 Forms of Force**
- 2.10 Forms of Support**
- 2.11 Forms which Support
- 2.12 Forms which Hook
- 2.13 Forms of Tension
- 2.14 Forms which Suspend
- 2.15 Forms which Hang
- 2.16 Forms which Spread
- 2.20 Forms of Curve**
- 2.21 Forms of Circling
- 2.22 Forms of Curve
- 2.23 Forms of Curvature
- 2.24 Forms which Rise
- 3.00 Forms of Adaptation**
- 3.10 Forms of Fluidity**
- 3.11 Forms which Droop
- 3.12 Forms which Flow
- 3.13 Forms which Swirl
- 3.14 Forms which Rotate
- 3.15 Forms which Smear
- 3.20 Forms of Nature**
- 3.21 Forms of Natural Things
- 3.22 Forms of Inlay
- 3.23 Forms of Firing
- 3.24 Forms of Texture
- 3.25 Forms of Impression
- 4.00 Forms of Change**
- 4.10 Forms of Reduction**
- 4.11 Forms which are Rolled
- 4.12 Forms which are Creased
- 4.13 Forms which are Folded
- 4.14 Forms of Storing
- 4.15 Forms of Bending
- 4.16 Forms of Shortening
- 4.20 Forms of Twisting**
- 4.21 Forms of Twisting
- 4.22 Forms of Twining
- 4.23 Forms of Dappling
- 4.24 Forms of Crumpling
- 4.25 Forms of Shaving
- 4.30 Forms of Severing (Breaking)**
- 4.31 Forms of Tearing
- 4.32 Forms of Chipping
- 4.33 Forms of Splitting
- 4.34 Forms of Cutting
- 4.35 Forms of Severing
- 4.36 Forms of Dropping
- 4.37 Forms of Removing
- 4.40 Forms of Transfiguration**
- 4.41 Forms of Simplification
- 4.42 Forms of Difference
- 4.43 Forms of Disarrangement
- 4.44 Forms of Dancing
- 4.45 Forms of Shading
- 4.46 Forms of Open-Work
- 4.47 Forms of Splashing

sides, for the maker and audience. For example, in the arrangement of stepping stones of a Japanese tea-garden, there is usually one or several stones placed to break the perfection or predictability of the arrangement. They may be scattered. Being able to scatter may mean an abundance of materials or sameness. As there are no rules for breaking the sense of perfection, the measure becomes a complex web of considerations that the simplified form language does not address. The same is true with the western approach.

Yuichiro Kojiro's use of terminology for a Japanese form taxonomy is quite different from the value laden language used by western formalists. His allows for easy participation of the lay-public without any barrier. However, even in his outline of possibilities he does not address the fundamental need for behavioral or social relationships between his language of forms and what they may mean to the evolution of narrative and metaphor. His research (1963) identifies seventy-seven form types, organized into four major groups.

2

The Western Basics of a Visual Literacy System

The western system has its roots in Europe, in the classics of Greece and Rome, the mastery of the Renaissance, through the schools of Baroque and Rococo to the Bauhaus. What is clear is that this vocabulary is void of content and relating context.

Both Japanese and western form languages are in many ways the same, both are contextless. Even though form can be its own context, contents or message, it is usually used in support of much more complex communi-

cation. In the exposition of these two approaches, the complexities that Roland Barthes suggested exist in the visual world, need to be added. His taxonomic view in *The Fashion System* (1967) starts pragmatically with qualities of the physical form of garments, but quickly transcends the pragmatic dimension into the semantic and syntactic dimensions of the fashion language system: the exploration of rhetorical structures, social function and cultural representation, rules and laws, and the complex value systems that deal with aesthetics, status and hierarchy. His approach makes very clear that any object or image is interwoven with the total web of culture, including social behavior and values, forms of expression of a field of great nuances, which in their construction constitute a very vital, living language in which the verbal and visual play supporting roles. Therefore, the two form typologies presented here are too abbreviated to support the depth and wealth of the receiver's receptive experience. In addition, the western form language includes concepts of elegance (refined grace in appearance; tastefulness in form or presentation; restraint in style and expression), harmony (agreement in feeling or quality; lack of confrontation; pleasing arrangement of all elements that make up the object or experience), beauty (a pleasing quality of form, color; excellence in concept and craftsmanship; originality; more than often made up of non-specifiable properties), taste (a personal, social or cultural preference for something aesthetically excellent), or aesthetics (pertaining to the criticism of taste, the sense of the beautiful and the love of beauty). These concepts are too dynamic, politically volatile and have too many social and cultural ramifica-

1.00 Image/Object Elements

- 1.01 Dot
- Line
- Plane
- 1.04 Shape/Form
- 1.05 Texture
- Tone/Color
- Scale/Dimension

2.00 Image/Object Organization

- Grouping/Clustering
- Placement/Position/Location
- Positive/Negative

3.00 Image/Object Dynamics

- 3.01 Balance/ Harmony
- 3.02 Contrast/Stress
- Direction/ Motion/Sequence

4.00 Image/Object Quality

- 4.01 Realistic or
- Naturalistic Representation
- 4.02 Objective Abstraction
- Non-Objective Abstraction

5.00 Tools**6.00 Materials****7.00 Processes/Techniques**

- Flatness/Roundness
- Regularity/Irregularity
- Simplicity/Complexity
- Stability/Dynamism
- Spontaneity/Predictability
- Variation/Sameness
- Distortion/ Accuracy
- Juxtaposition/Confrontation
- Monochrome/Colorfulness
- Fragmentation/Unity
- Exaggeration/Simplicity
- Symmetry/Asymmetry
- Economy/Abundance
- Predictability/Chance
- Organic/Mechanical
- Sharpness/Blurring

tions. They therefore elude clear definition and only function when connected to contexts.

Jennifer Gunji addresses the part that is missing in the strict outline of the taxonomy for Japanese form. She supports the taxonomy with explorations of the cultural thought process that begin to relate experience of objects and images to the Japanese aesthetic, not only through presentation of theories and philosophical views, but through physical practice that nurtures intuitive responses, "The outward manifestation is only a result of developed inward reflection and understanding of one's own expression." It is this reflection that enables one to give meaning to form through an unfolding, mentally and emotionally, of one's understanding of culture.

Matthew McClain's hypothesis is to develop approaches that counteract the intended visceral response of present day graphic mass communication. He proposes two possibilities for the amelioration of the situation in which media, especially the electronic media, has changed the character of the information that people in technological societies receive. The first is to develop a means of challenging information presented in massive quantities. The second is to further advance the technology to enable people to interact with the information they are receiving.

Limits of Language, Limits of Worlds

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**Some Things That Pictures are Good For:
An Information Processing Perspective**

Biography

Lester Loschky is a doctoral candidate in Psychology, studying visual perception and cognition, at the University of Illinois at Urbana-Champaign, USA (e-mail: loschky@uiuc.edu). His current research deals with the interrelationships between visual resolution, eye movements, visual attention and working memory. More generally, his interests are in visual perception, both visual and linguistic comprehension and the visual arts. This is reflected in the three fields he has studied: perceptual and cognitive psychology (currently at the University of Illinois), second language acquisition and instruction (MA in English as a Second Language, University of Hawaii at Manoa) and the visual fine arts (BFA in drawing and sculpture, Columbia College).

Abstract

Our visual experience of the world is extremely limited in scope both spatially and temporally. This is due to extreme restrictions on our visual attention, our region of high resolution within the field of view and our visual short-term memory, as shown by research on visual perception and memory. However, we have developed very efficient ways of dealing with these limitations. One biologically based scheme is to make rapid eye movements around our visual environment several times per second. This allows us to attend to items in our visual environment serially that we could not attend to simultaneously, and allows us to refresh our leaky visual short-term memories at the same time. A second entirely human invention is to make and view pictures. Pictures have a great capacity for allowing us to direct a person's attention to things they might not have noticed. Pictures also allow us the time to carefully explore visual information by attending to details that otherwise might have disappeared in our ever-changing world. Likewise, because pictures can hold information in a stable form, we don't have to use our limited visual short-term memories to hold onto their contents. Instead, we have the potential to repeatedly look back at any detail whenever the need arises in order to more deeply process its contents without loss of information due to the image changing. In this way, pictures facilitate our contemplation of visual information. Of course, pictures do not remove the inherent limitations on our visual attention, resolution and short-term memory, as clearly shown in the pictorial demonstrations contained in this article. However, pictures do extend our abilities to deal with these limitations in ways that greatly enrich our visual experience.

Human Perceptual and Cognitive Limitations

Those of us blessed with sight live in a rich visual world full of shapes, colors and lines, objects, people and events. Our eyes provide us with new visual information on an almost continuous basis.¹ And, though we rarely stop to think about it, most of us, if asked, would probably say that we are well aware of what is in our immediate surroundings — our visual environment — at any given moment. But psychological research on human perception over the last few decades has come to show that our visual experience of the world is in fact quite limited.

If the last statement above strikes you as obscure, it is quite understandable because most of the time we are completely unaware of how little visual information we are able to take in or hold onto. Nevertheless, a wealth of research suggests that our visual experience has the following characteristics:

1) *Visual attention is extremely limited.*

We pay attention to (and thus consciously experience) only a very limited number of things in our visual environment at any given moment. Those things which

we do not attend to can go completely unnoticed even when they are literally right in front of our eyes. This phenomenon has been shown experimentally and is known as "inattention blindness."² In a number of such experiments, a simple visual stimulus (e.g., a small black square, or a white circle, roughly the width of a pencil at arm's length) could be briefly flashed on a computer screen (for about 1/5 of a second) exactly at the center of vision (i.e., directly where participants were looking) and never be noticed by the majority of viewers, if they were doing a task that required them to pay attention elsewhere. Later, after the same people had been tested once in this way and were now more wary, when such a stimulus was flashed again, virtually all of them could correctly identify its shape and location.³ While such a result may come as a shock at first, it should really come as no surprise based on personal experience. Most of us can probably remember looking in vain for something, perhaps our keys or wallet, only to find after near exasperation that what we were looking for was in plain sight the whole time ("It was right in front of my nose")! Our failure to "see" something that is literally right in

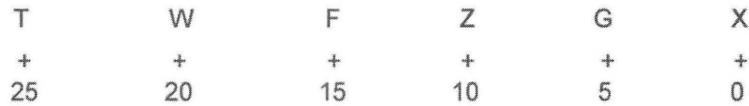


FIGURE 1.
A Test of Visual Acuity as a Function of Distance From the Center of Vision.
 If you hold the test figure at a distance of approximately 20 cm (or 8 inches) from your left eye, and you stare at the plus on the far right (above the number 0) with your left eye, you should have no problem reading the letter above it. However, as you try to read the letters above further points along the line, all the while holding your gaze on the far right plus, you will find it becomes increasingly difficult. Numbers below the pluses are the approximate degrees in visual angle that each plus is from the center of vision. Most people cannot read many letters beyond 10 degrees from the center of vision.

front of our eyes for an extended period of time can be explained by the fact that we can only pay attention to a limited region of our visual field at any given time, often only a single object. If we don't pay attention to something, even though we are looking at it, we will not consciously "see" it.⁴

2) *Visual resolution has severe spatial limitations.*

We can visually perceive only a small region of our visual field in high resolution. The rest of our visual field (peripheral vision) is degraded.⁵ This seems in many ways similar to what I just said above, but it is actually quite different.

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FIGURES 3 a-i

A Test of Visual Short-term Memory (or "Visuospatial Working Memory")

The test shows a series of everyday objects on a normal background (in this case, tools on a workbench). There are a series of images, each on a separate page. Look for just a moment at each of the images, lettered a-i without looking back at any previous images. When you get to image h, it will ask you which object was at the location marked by a square. Try to remember which object appeared there, and then quickly look at the next image i. That image will show four choices and will ask you to pick the one that you think was at the cued location. Afterwards, selecting your answer, you can check to see if you were right by looking back and finding the object that was indeed at that location. Frequently, viewers report only remembering a single feature of the object. (The scene backgrounds and objects were created by Gregory J. Zelinsky, State University of New York, Stony Brook.)

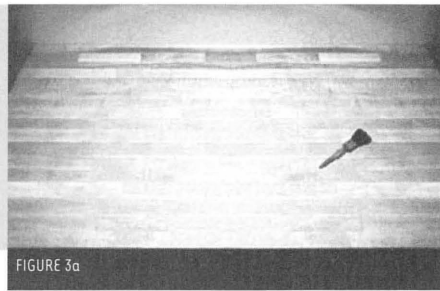


FIGURE 3a

¹ In fact our vision is interrupted briefly on average three to four times a second when our eyes move and during those times we are nearly functionally blind. Matin, E. 1974. Saccadic Suppression: A Review and Analysis. *Psychology Bulletin*, 81:12, 899-917. However, these 'blank periods' on average last only 0.05 of a second and only make up about twelve percent of the time we spend looking. Hallet, P.E. 1986. Eye Movements. In Boff, K. L. Kaufman and J. Thomas, editors. *Handbook of Perception and Performance*, Volume 1. New York: Wiley and Sons.

² The first published article looking at this phenomenon was Rock, I., C. Lennett, P. Grant and A. Mack. 1992. Perception Without Attention: Results of a New Method. *Cognitive Psychology*, 24, 502-534. A recent book on the topic is Mack, A. and I. Rock. 1998. *Inattentional Blindness*. Cambridge: MIT Press.

³ Rock et al, 1992 and Mack and Rock, 1998.

⁴ See also Simons, D.J. and C.F. Chabris. 1999. Gorillas in Our Midst: Sustained Inattentional Blindness for Dynamic Events. *Perception*, 28:9, 1059-1074.

⁵ For a good introduction to this topic and an explanation based on the structure of the retina, see Thibos, L.N. 1998. Acuity Perimetry and the Sampling Theory of Visual Resolution. *Optometry & Vision Science*, 75:6, 399-406.



FIGURE 2a.
A High-resolution Picture.



FIGURE 2b.
A Multi-resolutional Picture

Version 2b of the picture has been degraded in the visual periphery so that it matches the fall-off of visual resolution of the human visual system. The most degradation is on the left side of the image. If you hold the image at a distance of 32 cm (or 12.5 inches) from your left eye, and look at the cross, you should be unable to detect the degraded portion of the image on the left. (Image produced using an algorithm developed by Dr. Jian Yang of Imaging Research and Advanced Development, Eastman Kodak Company, Rochester, NY, USA.)

To get a better idea of precisely what I mean, try the peripheral vision test in figure 1. If you hold the test sheet at the listed distance and keep your eyes fixated at the O mark, you will find that it becomes difficult if not impossible to read the letters that are much further than the 10° distance. Figure 2b shows an application of this fall-off of visual resolution with distance from the center of vision.⁶ The image in Figure 2b should look identical to that in figure 2a if you hold page at the required distance and keep your eyes fixated on the cross. But once you move your eyes away from the cross in figure 2b, you can easily see the image degradation in the further areas of the image. This shows that visual resolution is separable from paying attention, because you should not be able to read the letters in figure 1, or detect the image degradation in figure 2b even when you know where to pay attention and are trying.⁷ The fact that we are only able to see very clearly at the center of vision is one of the chief reasons we constantly move our eyes (more on this later).

3) *Visual short term memory is severely limited.*

We are able to remember only a very limited number of details of what we have just looked at (including the identities of objects and their locations) at any moment.⁸ Furthermore, as we look from one object to another in a scene, our short-term visual memory is always best for those things we have most recently

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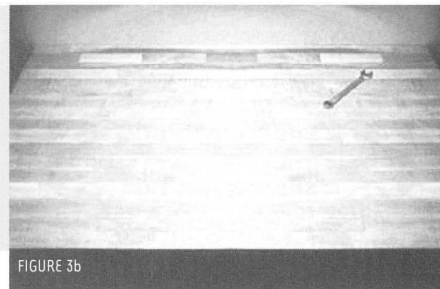


FIGURE 3b

⁶ The program that produced the multi-resolutional image in Figure 2b was created by Dr. Jian Yang of Imaging Research and Advanced Development, Eastman Kodak Company. For truly imperceptible peripheral image degradation, it is necessary to take into account the exact luminance and contrast levels of the image, as well as the precise viewing distance and the center of gaze. Thus, the printed image here is only a very rough approximation of what can be achieved with a properly calibrated computer monitor and eye tracking system.

⁷ Interestingly, however, it has recently been shown that paying attention to something increases our visual resolution for it, even when it is far from the center of vision. Yeshurun, Y. and M. Carrasco. 1999. Spatial Attention Improves Performance in Spatial Resolution Tasks. *Vision Research*, 39:2, 293-306. Of course, paying attention was not able to completely overcome the fall-off of resolution with distance from the center of vision, rather, it improved resolution for attended objects in comparison to unattended ones.

⁸ See, for example, Irwin, D.E. 1992. Memory for Position and Identity Across Eye Movements. *Journal of Experimental Psychology: Learning, Memory & Cognition*, 18:2, 307-317.

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looked at, and worse for those things we looked at only a few seconds earlier.⁹ You can experience this for yourself by taking the memory test in figure 3. If you are like most people, you will have a hard time with the test, even if you get the correct answer. Indeed, most people are quite surprised to find out how difficult such a seemingly simple task is, and they frequently report only remembering a single feature of the object (e.g., its color, shape, or orientation). Such tests point out how limited our visual short-term memories are; our surprise shows how unaware of this fact most of us are.

Together, the above three characteristics of vision put extreme limits on our moment-to-moment visual experience. Yet, surprisingly, we are almost never aware of these extreme restrictions. It is only when we are tested, either by

our circumstances, or, much less commonly, by experiments such as those illustrated above, that we realize how little visual information we are able to take in and retain for any short period of time. Nevertheless, taken together, the above statements suggest that we miss much (or most) of the detail (and potential meanings) in our visual surroundings, and most of those things that we actually pay attention to we quickly forget (except for the general substance of what they represent to us, if anything). Indeed, one might wonder how we manage to get along in life if we do so poorly at such simple visual tasks. Apparently, for our survival, we do quite well enough. We pay attention to those things we deem important, ignoring much of the rest of the scene, abstract the information important to our needs, and forget the rest

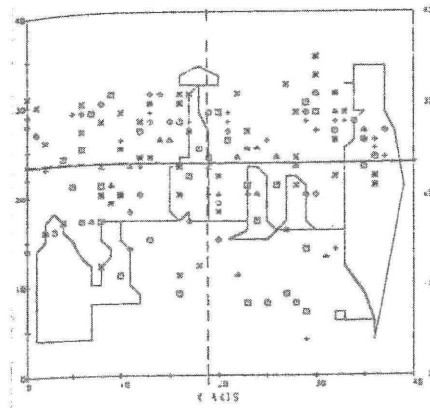


FIGURE 4
Eye Fixation Plot on a Schematic Representation of Georges Seurat's "Sunday Afternoon on the Island of La Grande Jatte."
 The symbols represent each of the eight viewers whose eye fixation data are plotted on the graph. The broken lines (both horizontal and vertical) represent the average location of all viewers' eye fixations. The solid line (which almost entirely overlays the horizontal broken line) is the best fitting line through all of the eye fixation points. Both measures show that the fixations center on the central figure of a woman with a parasol. (Courtesy of Calvin F. Nodine and James J. McGinnis. 1983. Artistic style, compositional design, and visual scanning. *Visual Arts Research*, 12, 3).

of the details. Whenever we need more information or have forgotten something, we simply investigate the environment by moving our eyes to our areas of interest and repeat the above process. Our visual system, though seemingly impoverished, is actually quite economical — indeed, the credo of the visual system should probably be “waste not, want not!”¹⁰

It turns out, however, that we have developed ways of making up for our visual limitations. One that I just mentioned above is biological and behavioral: we move our eyes constantly (normally about three to four times a second) in order to bring those objects that draw our attention into the high resolution area of our visual field. Moving our eyes back to things we looked at before is also useful for refreshing our memory. Since our short-term memory is so leaky, we often need to look again at what we looked at before in order to refresh our memory for what it was we just saw only a moment before.

A second way we have of coping with visual limitations is a purely human invention: making and using pictures.¹¹ Pictures help us to deal with our limited visual attention and memory spans and, in doing so, pictures greatly enrich our visual experience.

Attentional Assistance

Pictures help us cope with our limited visual attention spans in two important ways: by directing our attention, and by allowing us time to attend at leisure in order to explore visual information. In fact, as we shall see, these are inter-related themes.

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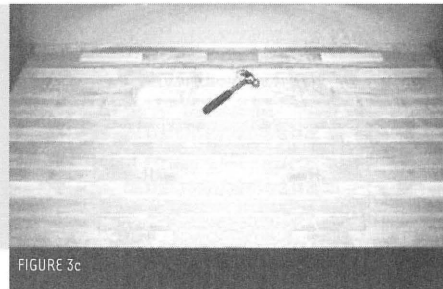


FIGURE 3c

⁹ For a classic paper on this topic, see the following. Phillips, W.A. 1983. Short-term Visual Memory. *Philosophical Transactions of the Royal Society of London*, B302, 295-309. For more recent work, see Zelinsky, G. and L. Loschky. 2001. Forgetting What We Have Just Seen: Recency Effects for Objects in Scenes Revealed by Eye Movements. (Manuscript submitted for publication.)

¹⁰ For an early discussion of this idea, see O'Regan, K. 1992. Solving the "Real" Mysteries of Visual Perception: The World as an Outside Memory. *Canadian Journal of Psychology*, 46:3, 461-488.

¹¹ In this paper, I generally use the term "picture" to describe what James Elkins refers to as hypographemic images, i.e., something "close to the ideal of a purely visual image," (90) such as a photograph. However, it seems that the arguments I am making about the value of pictures may more broadly extend to the most general domain of images, referred to by Elkins as "gramma," the Greek term for a "picture, written letter, or piece of writing" (83). Elkins, James. 2000. *The Domain of Images*. Ithaca, New York: Cornell University Press.

Imagine several photographers all gathered in one room taking pictures. Looking at their photographs later, each picture will focus our attention on different things from that same room. This highlights one of the primary reasons we make pictures: to direct people's attention to things we want them to see. Pictures can direct our attention in many different ways including their compositional structure (i.e., the arrangement of objects across the image), by using "pop-out" feature contrasts (i.e., contrast within perceptual dimensions such as color, size, orientation, etc.) and by motion cues in animated images.

Let us first consider compositional devices for guiding a viewer's attention. The most basic compositional device is to

put the point of interest in the center of an image. Studies have shown that people looking at pictures spend most of their time looking in and around the center of the images.¹² Of course, this begs the question of why people look at the center of images. Is it because of learned habit, or because high resolution vision is at the center of vision and this somehow maps onto the center of a picture, or because the center is the geometric mean of the image — i.e., we end up visiting the center as our attention travels across the image from place to place, or simply because the most salient objects usually happen to be in the center? In fact, this question remains unanswered, but it is possible that several of the above-mentioned factors interact to give us this "center bias" in pictures.¹³

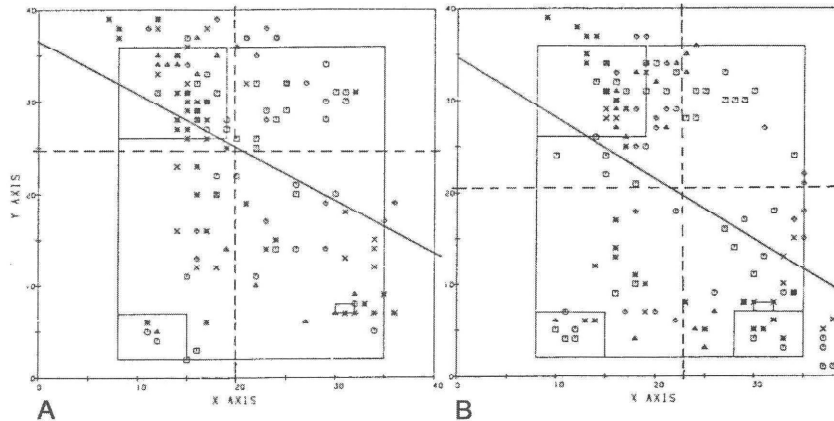


FIGURE 5

A) Eye Fixation Plot on a Schematic Representation of Piet Mondrian's "Opposition of Lines, Red and Yellow."

The symbols represent each of the eight viewers whose eye fixation data are plotted on the graph. The broken lines (both horizontal and vertical) represent the average location of all viewers' eye fixations. The solid line is the best fitting line through all of the eye fixation points, and indicates a diagonally oriented balance of attention in the picture.

B) A Modified Version of The Mondrian Composition.

This version was modified by the authors by adding a rectangle to the bottom right corner. This resulted in changed fixation patterns and thereby lowered both measures. (Courtesy of Calvin F. Nodine and James J. McGinnis. 1983. Artistic Style, Compositional Design and Visual Scanning. *Visual Arts and Research* 12, 4.)

A more sophisticated use of picture composition to guide the viewer's attention in a picture is to attempt to 'balance' the image. From an aesthetic standpoint, a balanced picture is one in which the opposing forces of the picture achieve an equilibrium; from an attentional perspective, a balanced composition is one in which the viewer's attention is more or less evenly distributed throughout the picture, though there will likely still be a bias towards the center and away from the edges.¹⁴ By careful arrangement of the elements in a picture, it is possible to affect the overall balance of where viewers place attention. This was nicely shown in a study of viewer's looking patterns on a number of art images.¹⁵ The study showed that, when eight different viewers looked at a reproduction of Georges Seurat's "Sunday Afternoon on the Island of La Grande Jatte" both the average eye position and the balance line (the best fitting line through all the viewers' eye fixation points) crossed at the central figure (a woman holding a parasol), as shown in figure 4. But, a well-balanced composition will not necessarily focus viewers' attention at the center of the picture. For example, figure 5a from the same study shows that when the same viewers looked at a reproduction of a painting by Mondrian, the eye fixation points were aligned more diagonally. Of particular interest, we see that in figure 5b, when the authors made a slight change to Mondrian's composition

(by adding a small rectangle in its bottom right corner), it dramatically changed the viewers' eye fixation center point. Thus, this study clearly supports what artists have argued for centuries, namely that the way an image is composed can alter where viewers look in a picture, i.e., what they pay attention to in it.

Nevertheless, research on the effects of compositional balance on eye move-

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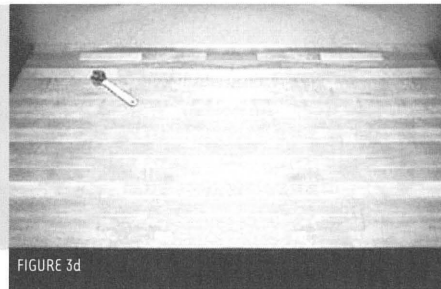


FIGURE 3d

¹² Buswell, G.T. 1935. *How People Look at Pictures: A Study of the Psychology and Perception in Art*. Chicago: University of Chicago Press. See also Mannan, S.K., K.H. Ruddock and D.S. Wooding, 1997. Fixation Patterns Made During Brief Examination of Two-dimensional Images. *Perception*, 26:8, 1059-1072.

¹³ Locher, P. 1996. The Contribution of Eye-movement Research to an Understanding of the Nature of Pictorial Balance Perception: A Review of the Literature. *Empirical Studies of the Arts*, 14:2, 143-163.

¹⁴ Locher, 1996.

¹⁵ Nodine, C. and J. McGinnis. 1983. Artistic Style, Compositional Design and Visual Scanning. *Visual Arts Research*, 12, 1-9.

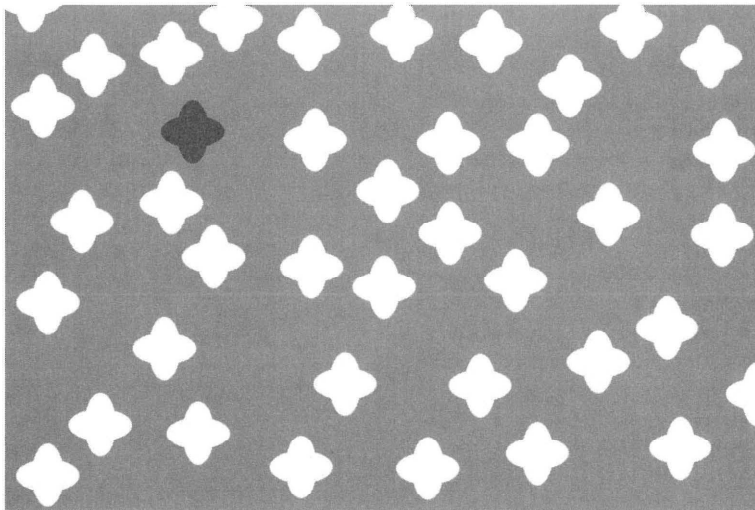


FIGURE 6a

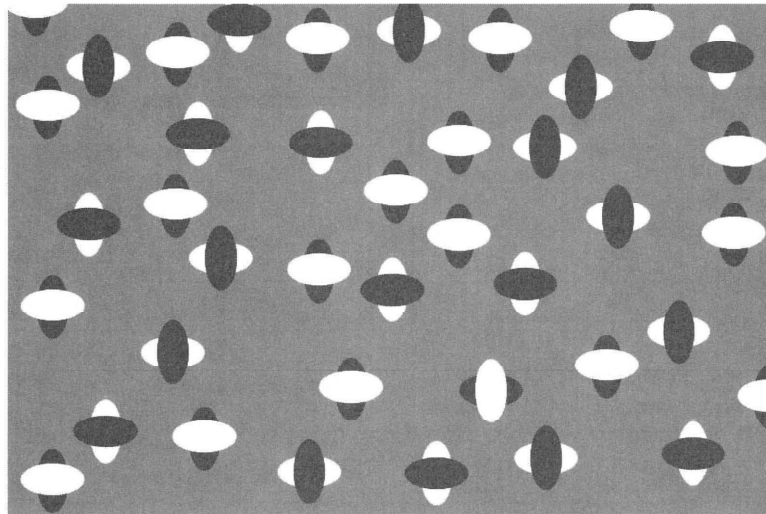


FIGURE 6b

FIGURE 6a

An Image Illustrating the Phenomenon of Feature-based Attentional "Pop-out."

The unique item in the image "pops out" (i.e., immediately captures attention) by virtue of differing in terms of a single feature dimension (in this case, luminance) from all other items in the image.

FIGURE 6b

An image Illustrating the Phenomenon of Feature Conjunction Search.

The unique item in this image is defined by a particular conjunction of features (orientation, luminance, and overlap) that are shared in different combinations by all other items in the display. Thus, the unique item can only be found by a time-consuming attentional search through the image.

ments also indicates that the effects of balance are subtle, and they are stronger for viewers with more experience in viewing art than for naïve viewers.¹⁶ Thus, other, less subtle means may be more effective in directing viewers' attention in pictures. One such unsubtle means of directing attention is to create attentional "pop-out" by contrasting one element in the picture with all other elements along a single perceptual feature dimension. As can be easily seen in figures 6a and 6b, the unique item immediately pops out in the former, but not in the latter. This is because in figure 6a, the unique item differs from all other items on a single feature dimension, brightness. In contrast, in figure 6b, the unique item differs from all other items in terms of a unique conjunction of features, in this case brightness, orientation and overlap.¹⁷ A striking example of using feature pop-out in a more complex image can be found in a long tracking shot in the film, "Schindler's List." It is an aerial shot of the Warsaw ghetto, and we see thousands of people walking in all directions. A single figure of a small girl, however, is colored, while the rest of the figures are monochrome. This instantly draws the viewer's attention to the girl from among the thousands of other figures in the shot. There appear to be a number of feature dimensions within which pop-out can occur, including size, orientation, color, brightness and perceived depth in the plane.¹⁸

Finally, a particularly powerful method of attracting attention in a picture is through motion, which explains why waving at someone is often the best way to get their attention. We can explain this in terms of the connections between low-level motion detection mechanisms in the brain and a phylogenetically primitive brain area, the superior colliculus, which guides attention and eye move-

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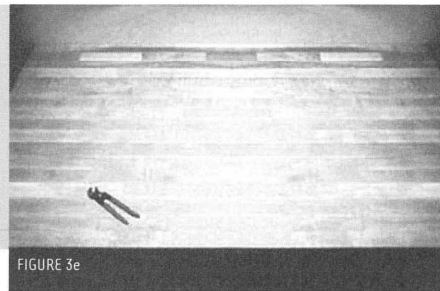


FIGURE 3e

¹⁶ Locher, 1996.

¹⁷ Two important papers on this topic follow. Treisman, A.M. and G. Gelade. 1980. A Feature-integration Theory of Attention. *Cognitive Psychology*, 12:1, 97-136. Wolfe, J.M. 1994. Guided Search 2.0: A Revised Model of Visual Search. *Psychonomic Bulletin & Review*, 1:2, 202-238.

¹⁸ Wolfe, 1994.

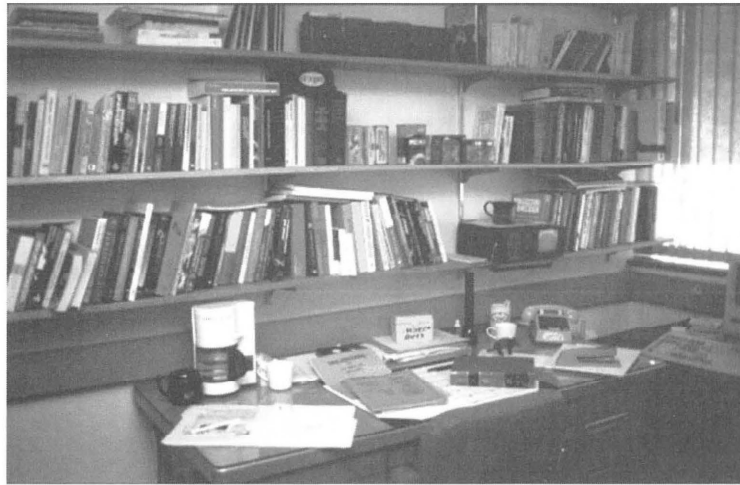


FIGURE 7

A "Spot the Difference" Picture Pair.

The difference between the two image versions is much larger than most viewers realize at first. In fact, roughly twenty-five percent of the image area of each version of the picture differs from the other version. There are two probable reasons why it is so difficult to perceive all the differences between the images: 1) the limited extent of visual attention at any given point in time allows only a few objects to be recognized and 2) the fact that the differences do not change the 'gist' (i.e., overall meaning) of the scene means they do not stand out. (Images courtesy of Gregory J. Zelinsky, State University of New York, Stony Brook.)

ments.¹⁹ Indeed, this connection is particularly strong in lower animals such as frogs, for whom visual motion is the pre-eminent cue for orienting attention.²⁰ Thus, in animated/moving pictures, the viewer's attention can be most effectively guided to an area of interest by having it move. A special case of this is time-lapse photography. In this case, we use a picture sequence to create a perception of motion, which is otherwise imperceptible (e.g., "watching the grass grow") because the rate of change is normally too slow for our motion detectors to respond to.

In sum, pictures can direct our attention to an intended point of interest, which is much more difficult to achieve in our normal visual environment — usually the best we can do is to point at something and say "Look at that!" But pictures allow us far greater subtlety and precision in guiding a person's attention, and they can do so across vast distances of time and space. Therefore, we can consider the ability to direct visual attention to be a special feature of pictures, which from a communication standpoint, represents expanded possibilities for the sender of information.

Conversely, a second attentional benefit of pictures is related more to expanding the possibilities for the receiver of information. Specifically, because pictures can freeze details in time and space, this allows us to leisurely explore a scene and take in all its particulars. Compare this situation to what we see while walking down a bus-

ting city street. We are met with a million details many of which are changing on a moment-by-moment basis. Our attentional limitations are far exceeded and we are able to take in only a very few details at a given place and time. Much of what is going on around us is completely missed and becomes "background." It is only by taking or making a picture of the scene that we can freeze the details in it. This

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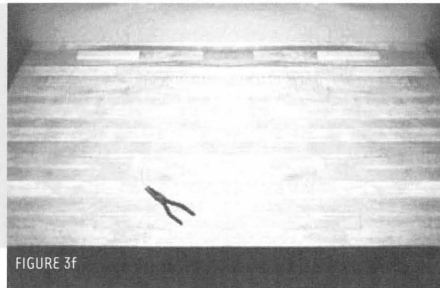


FIGURE 3f

¹⁹ Newsome, W. T. 1997. Deciding about Motion — Linking perception to action. *Journal of Comparative Physiology A—Sensory, Neural & Behavioral Physiology*, 181:1, 5–12.

²⁰ Ewert, J.P. 1974. The Neural Basis of Visually Guided Behavior. *Scientific American*, 230:3, 34–42.

extends our ability to explore the image in greater depth, giving us time to send our eyes to more points of interest, which in turn enables us to view them in high resolution at the center of vision.

258 This benefit of pictures can be explained in terms of two basic findings from research on visual attention. First, our visual attention is spatially and temporally limited. It takes time to scan a scene and attend to all of its details, which are spread over an extended region of space. In this context, it is worth considering figures 6a and 6b again. Unless an item pops out and grabs our attention almost instantaneously as in figure 6a, we may only notice it by scanning through the image until we finally hit upon it as in figure 6b, and this takes time and effort.²¹ This explains the idea behind the expression “like trying to find a needle in a haystack.” A needle looks a lot like a piece of hay (both are long, thin, and straight), and thus finding it takes a long time.

Second, paying attention to something is necessary in order to recognize what and where it is.²² Most people are unaware of this fact, because we perceive the ‘gist’ of a scene, for example whether it is an office or a forest, almost ‘instantaneously,’ i.e., within a single eye fixation (or about 100–200 ms).²³ Thus, we have the impression of seeing everything in a scene at any given moment in time. In fact, however, recent research indicates that what we are perceiving is limited to 1) the specific item we are paying attention to at that moment and 2) the general spatial layout and category of the scene.²⁴

Taken together, these two aspects of visual attention result in our generally being unaware of the specific identities and locations of items in a scene until we take the time to eventually come across them. For example, take a look again at the picture shown in figure 2a. One

can very quickly recognize that it shows a street market scene. But even though I’ve looked at this picture numerous times, only recently did I first notice the third of three small children standing between the two central women. Likewise, few people seem to notice the crow in the picture. Thus, it is through freezing the details in a picture in the temporal and spatial dimensions that we are afforded the opportunity to leisurely attend to the various parts of an image.

This, in large part, explains the difficulty of detecting a change between two otherwise identical images that are separated in time and space. This is best exemplified by “spot the difference” picture pairs, as shown in figure 7. When we look at either picture in a spot the difference pair, we see what looks like the same picture because both pictures have the same ‘gist’ (or overall meaning). In this case, both versions show an office. If only the identity and/or location of individual items differ between the two versions, without changing the gist, these differences will not be readily apparent until we carefully pay attention to and compare each particular item in each picture.²⁵

Notice, of course, that this kind of picture change violates a real world constraint — namely that changes to a real world scene are generally accompanied by perceived motion, with the exception of grass growing, etc. If the changing pictures were shown one after the other, as in an animated image sequence, we would perceive motion due to the change and this would immediately draw our attention to the change. Thus, “spot the difference” puzzles can be considered to be ‘defective picture pairs’ because they inhibit our ability to detect a change, by blocking the attentional guidance property of perceived motion. Nevertheless, because their details are frozen in time and space, we have the opportunity to

detect the change if we take the time to look carefully. Thus, to the extent that the attentional guidance aspect of pictures is decreased, we must depend on the expanded possibilities for attentional exploration in pictures (because details are frozen) to compensate for it.

Memory Management

Because pictures can freeze details, they also expand the potential for the person receiving visual information to more deeply contemplate it. This is a by-product of the fact that through storing visual information in an unchanging form, pictures help us overcome our visual memory limitations, both long term and short term. The use of pictures as long-term storage of visual images is probably their best-known function. People constantly take photographs as records of their experience. Without photographs, we often have difficulty remembering even those images that should be the most memorable, for example what our parents looked like when we were children, or what our children looked like when they were young. This explains the expressions of surprise we often make when we look at our old photographs — “I can’t believe I looked like that!”

Most of us, however, are less aware of the way pictures serve as aids for our short-term memory as well. Earlier I suggested that you try the visual short-term memory test in figure 3 as a way of illustrating how little we remember of what we see around us on a moment-by-moment basis. But the importance of short-term memory and its varying uses can also be surprising to discover. For example, language compre-

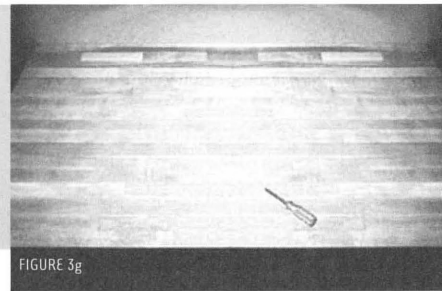


FIGURE 3g

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²¹ Again, see Treisman and Gelade, 1980 and Wolfe, 1994.

²² Schneider, W.X. 1995. VAM: A Neuro-cognitive Model for Visual Attention Control of Segmentation, Object Recognition and Space-based Motor Action. *Visual Cognition*, 2:2/3, 331-376.

²³ Biederman, I., R. Mezzanotte and J. Rabinowitz. 1982. Scene Perception: Detecting and Judging Objects Undergoing Relational Violations. *Cognitive Psychology*, 14, 143-177. Boyce, S. and A. Pollatsf. 1992. Identification of Objects in Scenes: The Role of Scene Background in Object Naming. *Journal of Experimental Psychology: Learning, Memory and Cognition*, 18, 531-543.

²⁴ See O'Regan, 1992.

²⁵ Simons, D. and D. Levin. 1997. Change Blindness. *Trends in Cognitive Sciences*, 1, 261-267. McConkie, G.W. and L. C. Loschky. (In press.) Change Blindness. *Encyclopedia of Cognitive Science*. MacMillan/Nature Publishing Group.

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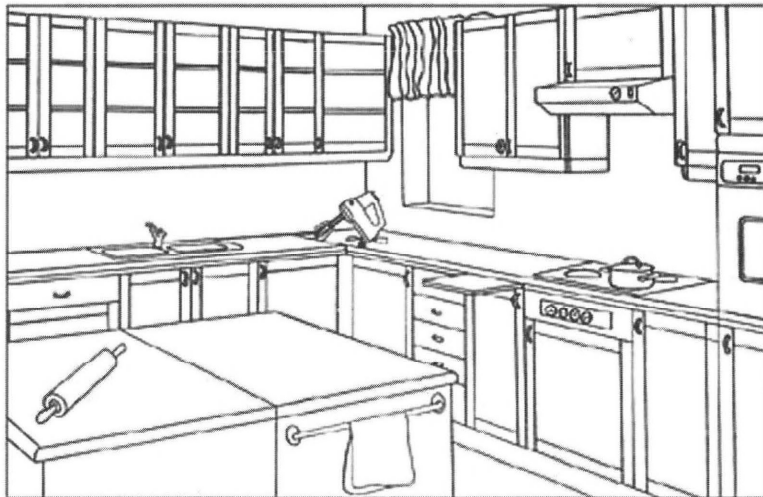
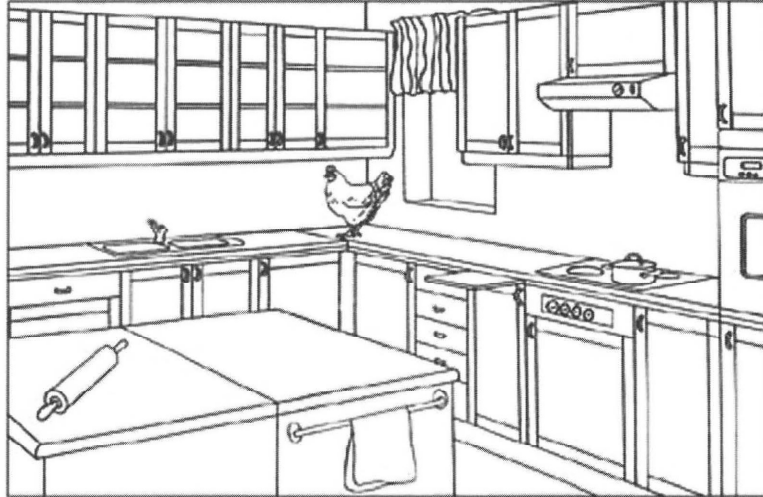


FIGURE 8

Two Versions of a Picture Differing in Their Typicality.

The top version of the picture contains an atypical item for a normal American kitchen scene, a live chicken. In contrast, the corresponding item in the bottom version of the picture, a mixer, is very typical for a normal American kitchen scene. When shown each of these versions of the picture, American college student viewers were much more likely to look long and repeatedly at the chicken than they were to look at mixer. This pattern of eye movements can be explained in terms of the role of working memory in visual comprehension. (Background scene and object images courtesy of John M. Henderson's Visual Cognition Laboratory, at Michigan State University.)

hension is intimately connected with the use of short-term or 'working memory.'²⁶ Most people who have studied until late at night have probably experienced the effects of fatigue on short-term memory and how this affects reading comprehension. You can be reading along, arrive at the end of a sentence and suddenly realize that you can't remember what the beginning of the sentence was! Clearly, you cannot comprehend how a sentence fits in with the rest of the text if you cannot remember what it said. Luckily, because text does not change from moment to moment, the simple solution to such a problem is to refresh your memory by sending your eyes back to the beginning of the sentence and read it again. The same is true, of course, for other sorts of visual representations, such as pictures. Suppose, you are leafing through a popular magazine filled with pictures. You may spend a second or less looking at each picture as you "page surf" through the magazine. At some point, however, you might be tempted to go back to the last picture you had passed and examine it more closely. In this case, the physical picture on the page serves to refresh your visual memory. Obviously, if you had perfect memory there would be no need to look at the picture again — every detail would be etched in your

mind's eye.²⁷ Thought of in this way, the short-term memory test in figure 3 can, as a whole, be considered another sort of 'defective picture.' This is because, by presenting all of the objects in separate images, it becomes more difficult to look back at objects you looked at before, and thus taxes your visual short-term memory (which makes it ideal for testing the limits of memory).

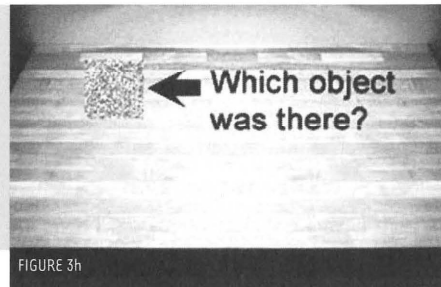


FIGURE 3h

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²⁶ A classic paper on this topic follows. Just, M.A. and P.A. Carpenter. 1992. A Capacity Theory of Comprehension: Individual Differences in Working Memory. *Psychological Review*, 99:1 122-149.

²⁷ Frequent claims to the contrary notwithstanding, there is only the scarcest evidence of true "photographic memory." The best test devised so far is the ability to fuse two random dot stereographic images (like the "Magic Eye" 3D images), while looking at one image with one eye and remembering the other image as previously viewed with the other eye, in order to see a complete image. So far, only a single person (under normal conditions) has passed the test. Stromeyer, C. and J. Psotka. 1970. The Detailed Structure of Eidetic Images. *Nature*, 225, 346-349. This is despite the fact that John Merritt published articles in many popular magazines along with a self-test asking readers to write-in if they passed. Out of the potentially vast number of readers of his articles (perhaps a million) thirty wrote him to report having been able to pass the self-test. However, none of them was able to pass a similar test at his lab. Thus, the proportion of people having this ability is probably less than one in a million. Merritt, John. 1979. None in a Million: Results of Mass Screening for Eidetic Ability Using Objective Tests Published in Newspapers and Magazines. *Behavioral & Brain Sciences*, 2:4, 612. Haber, R.N. 1979. Twenty Years of Haunting Eidetic Imagery: Where's the Ghost? *Behavioral & Brain Sciences*, 2:4, 583-629.

Importantly, visual short-term memory appears to be tightly connected with what I will call "visual compr>ension." Research has shown that when we look at a picture that is difficult to make sense of, we send our eyes repeatedly to the incompr>ensible parts. For example, in one study, viewers were shown, among other things, a picture of a kitchen scene. If, as shown in the top of figure 8, it contained a chicken standing on the counter, viewers were likely to look at the chicken longer and repeatedly. This is presumably because the American college student viewers in the study were not accustomed to seeing live chickens in contemporary American kitchen scenes. However, when the same scene was shown with a mixer in the same location on the counter, as in the bottom of figure 8, the viewers were far less likely to look repeatedly or as long at the mixer.²⁸ The skeptical reader might explain this simply by saying that, obviously, the chicken is odd in the kitchen context and the mixer is not. But the interesting question is, why should people look long and repeatedly at something that seems strange? First of all, longer looking times (i.e., fixation or gaze durations) in reading commonly indicate compr>ension difficulties, and the same is true for looking back at a word that was previously fixated.²⁹ More specifically, I would argue that in scene viewing, we look at odd things repeatedly because each time we are 'asking a different question' of the thing we are looking at. For example, "Is that a chicken??" "Is this a farm kitchen??" "Did this chicken just fly in the window?" Such 'questions,' however, must be occurring at a pre-verbal level because each one is accompanied by an eye movement to a relevant part of the image (e.g., the chicken or window), with multiple eye movements occurring

each second — much faster than one could actually articulate such a question.³⁰ Importantly for our discussion, it is reasonable to suspect that this process of pictorial compr>ension is related to visual short-term memory or more specifically visual 'working memory.'³¹ Thus, in reading, the need to look back at a previously fixated word, for example the referent of a pronoun (e.g., "Mrs. Jones... She..."), can be explained in terms of a compr>ension difficulty specifically related to working memory limitations (i.e., forgetting who "she" is).³² More generally, in the process of compr>ension, when we need further information about an item we looked at before, we can either refer to our working memory of it, or send our eyes back to it and get the information 'brand new.'

In fact, if we need to, most of us are capable of relying more on our visual working memory and reducing the number of times we look back at a particular object we are thinking about.³³ But we find it much easier to look at the relevant picture areas repeatedly, and there is usually little 'cost' to making more eye movements. This is much the same as when we reread a complex sentence several times in order to grasp its meaning. If we could remember every word from the first time we read the sentence, there would be no need to reread it as we attempted to understand it — we could simply review the sentence in our head. But doing so would require that we hold the entire sentence in memory while we also attempted to analyze it. In order to reduce the burden on our memory, we simply refresh our memory for the words we are concerned with by looking at them again. Thus, another important function of pictures is to allow us to repeatedly refresh our visual working memory in order to make sense of what we see. By

relying on information in the picture, rather than our memory of it, we can free up our memory resources to use for other processes, such as relating information from the object we are looking at to other information in working memory in order to comprehend the picture. Once we have abstracted the information we need from the picture, we are less likely to look at it again.³⁴ Of course we do exactly the same thing while

looking at objects in the real world. But a special characteristic of pictures is that they allow us to repeatedly refresh our short-term memories of objects without their having changed or disappeared in the mean time. Of course, we cannot make use of this attribute of pictures if they are dynamically changing, for example on television, unless we have the option of reviewing them, as in video or digital media.

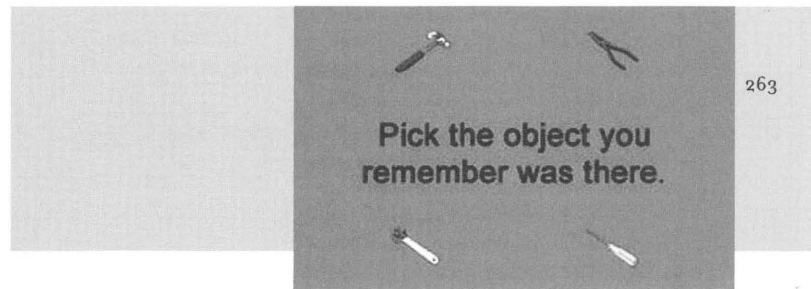


FIGURE 3i

²⁸ Henderson, J.M., P.A. Welfs and A. Hollingworth. 1999. The Effects of Semantic Consistency on Eye Movements During Complex Scene Viewing. *Journal of Experimental Psychology: Human Perception & Performance*, 25:1, 210-228. Figure 8 (top and bottom) come from a set of scene and object images publicly available on Dr. Henderson's laboratory website (<http://eyelab.msu.edu/VisualCognition/>).

²⁹ See, for example, Rayner, K., C.E. Rancy and A. Pollatsh. 1995. Eye Movements and Discourse Processing. In O'Brien, R.F. Jr. and E. J. O'Brien, editors. *Sources of Coherence in Reading* (Vol. xiv, 9-35). Hillsdale, New Jersey: Lawrence Erlbaum Associates, Inc.

³⁰ For research looking at the relationship between the eye movements people make and their speech while they are describing pictures they are looking at see the following. Griffin, Z.M. and K. Bock. 2000. What the Eyes Say About Speaking. *Psychological Science*, 11:4, 274-279.

³¹ Working memory is thought of as including both the short-term storage of information and the concurrent manipulation of that or other information for some purpose, for example comprehension, reasoning, etc. See Logie, R. H. 1996. The Seven Ages of Working Memory. In Richardson, J., R.W. Engle, L. Hasher, R.H. Logie, E.R. Stoltzfus and R.T. Zacks, editors. *Working Memory and Human Cognition*. New York: Oxford University Press, 31-65.

³² Rayner et al., 1995.

³³ For more evidence and a detailed discussion of this see the following. Ballard, D.H., M.M. Hayhoe, F. Li and S.D. Whithead. 1992. Hand-eye Coordination During Sequential Tasks. *Philosophical Transactions of the Royal Society of London*, B(337), 331-339.

³⁴ For example, people are less likely to look at an object in a picture that they are describing if they refer to it using a pronoun (e.g., he, she, it) than if they refer to it using a noun (e.g., the tall man). van der Meulen, F.F., A.S. Meyer and W.J.M. Levelt. 2001. Eye Movements During the Production of Nouns and Pronouns. *Memory & Cognition*, 29:3, 512-521. Referring to an entity by using a pronoun suggests a level of abstraction in our mental representation of it.

Conclusion

Pictures enable us to lead richer visual lives by expanding our options in dealing with our limited attentional and short-term memory faculties. Pictures can be an extremely effective means of directing a person's attention to things they might not have noticed. And because pictures can freeze visual information in an unchanging state, they allow a viewer more time to carefully explore (i.e., pay attention to) visual details that otherwise might have disappeared in the continuous flux of the visual world. Furthermore, because pictures can store information in a stable state, our leaky short-term memories don't have to struggle to hold onto their contents. This then frees up mental resources for contemplating (i.e., more deeply processing) information in the image. Whenever we need to go back to get further information from a picture, in order to think about it in relation to other information, it is still there, provided the pictorial information is stable or dynamically retrievable. An interesting related question is whether our habits in looking at pictures can alter the ways in which we look at the world. Watching television is commonly argued to result in shortening viewers' attention spans, since the images change at a more rapid pace than much of the non-televised world (see a detailed discussion of this in Mathew McClain's article in this issue). Whether this is true is an empirical question, but it certainly makes sense within the framework I have presented here. It has also been frequently said that the most important thing in becoming a visual artist is to "learn how to see." Within the context of this article, I would argue that a critical factor in such "sight" is how much and what we pay attention to in our visual surroundings, and how deeply we process

that information. And finally, although I have been speaking about visual attention and memory as two separate things, they are tightly interconnected: in general, we remember only those things that we pay attention to.³⁵ Thus, although we are all faced with basic attentional and memory limitations, pictures can help us by guiding our attention, allowing us the luxury of attending to details and enabling us to more deeply process the contents of the visual world.

**Some Things That Pictures are Good For:
An Information Processing Perspective**

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³⁵ Irwin, D.E. and R.D. Gordon. 1998. Eye Movements, Attention and Trans-saccadic Memory. *Visual Cognition*, 5:1, 127-155. Neisser, U. and R. Becklen. 1975. Selective Looking: Attending to Visually Specified Events. *Cognitive Psychology*, 7:4, 480-494.

Critical Viewing of Television

MATTHEW MCCLAIN

Biography

Matthew McClain is a graduate student in the department of electrical and computer engineering at the University of Illinois at Urbana-Champaign. His research in artificial intelligence focuses on language acquisition in an anthropomorphic robot. His undergraduate degree is in electrical engineering from Rensselaer Polytechnic Institute.

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Abstract

Television provides people in technological societies with information of a completely different character than any other media. Compared to the activities of reading or normal interaction with our environment, the act of watching television is characterized by very little cognitive involvement of the viewer. Whether it is advertisements, sitcoms or even educational programming, the way that television is used to convey information inhibits the viewer's ability to critically challenge the information they are receiving. I propose two possibilities for television viewers to overcome this impediment to cognition — the first is to develop a personal means of facilitating a critical evaluation of the information presented on television, sometimes called critical viewing. The second possibility emerges from further advancements in technology where the viewer is enabled to take a more controlling and interactive role in the information they are receiving.

The dominant form of graphic mass media in our society is television. Because of the way in which this medium presents information, cognitive responses by the viewer are hindered. Mechanisms are used in the production of television to inhibit long-term storage and critical evaluation of the information presented. To assume that a viewer's purpose may be to cognitively analyze what they are watching as opposed to just wanting to be entertained, I will investigate and propose actions that can be taken the next time one decides to watch television. Last I'll explore the possibilities for new technology to enhance television and create new forms of graphic mass communication that will encourage the viewer to use their cognitive abilities. As everything is relative, I'll compare and contrast two other common situations in which we receive information: reading and normal interaction with our environment.

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The two principle ways in which television hinders the viewer's ability to use cognitive functions are that it impedes long term storage and makes other functions such as imagination and planning nearly obsolete. In order to be able to perform cognitive tasks on the visual information we receive, we need to be able to recall it from our long-term memory. The problem with television is not that there is too much information present, as whenever our eyes are open we are receiving at least as much input. In order to deal with reception of massive amounts of information, we filter out much of what we see by focusing our attention. However, television's constant motion and scene switching grabs our attention, preventing us from focusing on any one thing for very long. As Singer points out, "Human beings are, in effect, 'wired up' to make a response to any sudden, new, and unexpected stimulation that occurs in the environment. This is called 'orienting reflex' and insures our safety since it makes certain that we will react suddenly and effectively to any major change that confronts us" (Singer, 37). This, combined with the fact that our short-term memory is very vulnerable to interference from continued input

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the information that it exposes us to. Singer states: "This is a basic problem with the television medium. It is in effect introducing us constantly to new material before we have had a chance to grasp either the printed or verbal and auditory material being presented, and as a result it yields a high rate of information loss" (Singer, 53).

Compounding this effect is the absence of time for reflection on the information given to us. In Posner's study of visual short-term memory, he cites Waugh and Norman's (1965) model of memory which states that "...the effect of rehearsal is to present an opportunity for information to be sampled from the short to the long-term store" (Posner, 55). Posner also refers to research by Sperling (1963) and Conrad (1960) which shows that this rehearsal is only effective for helping long term storage if it is done before the capacity of short term memory is reached (Posner, 55). Sperling's work on the capacity of visual information store finds that when presented with 12 symbols for 50 milliseconds, the subjects of his test could recall about 9.1 symbols immediately after the symbols were taken away, and this number decays to about 4.3 symbols one second later (Sperling, 20-21). So, the information presented to us on television quickly fills our short term visual memory, making frequent reflection necessary to retain what we see.

In contrast, when reading there are no inherent distractions (of course the environment one chooses to read in may present some). As well, we have full control over the rate at which we are receiving information. In order to help incorporate what we read into long-term memory we can stop at any time and reflect on what we were reading. When involved in normal discourse with our environment, we choose what we want to focus on and filter out the rest. Of course, there are situations when there is a lot of motion in our field of view, but usually most of it is gradual and/or predictable and so can also be filtered out. An exception would be a situation like driving a car, when there may be fast

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moving objects in our field of view, which is why the task commands so much of our attention. But even a situation like that doesn't have the distractive effect of instantaneously cutting to a new view as done on television through switching camera angles or shifting to a new scene. The only comparable phenomenon that comes to mind would be watching fireflies. If you've been outdoors on a warm summer evening in the company of these insects, it can be a distracting experience. You can't help focusing your attention on each little green blink.

The other cognitive functions that are used while reading or normal daily discourse and not used while watching television are imaginative/creative thinking and planning. I group these together since both involve synthesizing information from our own experiences with the information being received. One could also include the forming of schemas, a cognitive function that is performed to some extent while watching television. Anderson and Lorch theorize that while television viewers are actively engaged in creating schemata: "We assume that the viewer, through experience with television as well as through general world experience, develops expectations about the temporal and conceptual flow of normal television programs" (D.R. Anderson, 6). At this point, I would question how much of an active experience schema forming is as well as the complexity and variance in the schemata that we form for television viewing. If a show has simplistic characters and predictable plotlines, it would make sense that the schema formed for dealing with such a show would not be very complex and would not need frequent modification. Planning is a cognitive function that we need to use when interacting with our environment. We must think about what actions we are going to perform next to meet whatever goals we determine for ourselves. This capacity is not needed when viewing television — the viewer simply sits back and watches. Such a planning mechanism is not used when reading, either, however this is where imagination or creative thinking comes in (just as imagination is

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The other cognitive functions that are used while reading or normal daily discourse and not used while watching television are imaginative/creative thinking and planning. I group these together since both involve synthesizing information from our own experiences with the information being received. One could also include the forming of schemas, a cognitive function that is performed to some extent while watching television. Anderson and Lorch theorize that while television viewers are actively engaged in creating schemata: "We assume that the viewer, through experience with television as well as through general world experience, develops expectations about the temporal and conceptual flow of normal television programs" (D.R. Anderson, 6). At this point, I would question how much of an active experience schema forming is as well as the complexity and variance in the schemata that we form for television viewing. If a show has simplistic characters and predictable plotlines, it would make sense that the schema formed for dealing with such a show would not be very complex and would not need frequent modification. Planning is a cognitive function that we need to use when interacting with our environment. We must think about what actions we are going to perform next to meet whatever goals we determine for ourselves. This capacity is not needed when viewing television — the viewer simply sits back and watches. Such a planning mechanism is not used when reading, either, however this is where imagination or creative thinking comes in (just as imagination is not normally used during daily discourse). To fill in details about what we read, we create mental pictures based on past experiences. Television provides such pictures for us. J. Singer states that, "... it is likely that reading provides more extensive practice for imagery capacity, whereas television has the potential merely for stimulating specific image content, but not for providing the opportunity for independent practice of such skills, since it substitutes an external image that one can passively lean on rather than forming one's own" (Singer, 43).

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In order to facilitate a critical analysis of television, an active stance toward the viewing experience is necessary. This capacity can be generalized for all media and has been defined as "the skillful collection, interpretation, testing and application of information regardless of medium or presentation for some purposeful action" (J. Anderson, 22). First, in order to facilitate use of cognitive functions on the information received from television, it is imperative that the information enter long-term storage. Fundamental to this is extracting the information that is important and allowing time to reflect. Since this practice is simply a form of learning, principles of learning to learn and metacognition can be applied to become a more critical viewer. Becoming aware of the learning situation is an important aspect. "In order to become expert learners, students must develop some of the same insights as the psychologist into the demands of the learning situation. They must learn about their own cognitive characteristics, their available learning strategies, the demands of the various learning tasks and the inherent structure of the material" (Brown, Campione, and Day, 16-17). So, in order to watch television with a critical mind, we must be aware of factors like the method of production of television, the assumptions that we have while watching television and our purpose for watching. This awareness will help us ask the right questions about the information we receive — another key part of becoming a critical viewer. Reynolds and Wade note in their study of metacognition programs, "A characteristic underlying many successful elaborative approaches is the use of self-questioning to monitor and regulate learning"

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Once we've identified the right questions to ask, time to reflect on the evidence to facilitate the long-

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Once we've identified the right questions to ask, time to reflect on the evidence to facilitate the long-term storage of the information is needed. In order to provide this time for reflection, an easy thing to do is mute the commercials and look away from the television. This is already a common practice among many television viewers. Another way to encourage rehearsal is to watch with someone else. A short discussion during commercials or even during the show creates good opportunities for reflection. If you see something important or something you don't understand, tell your viewing partner about it. Concerning learning programs, Bazeli notes that, "It is in cooperative learning approaches that the best conditions for promoting generative knowledge are found..." (Bazeli, 213). As well, your partner might pick up on or remember something that you didn't and bring a different point of view, both adding to what you can potentially take away from the viewing experience.

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Advancements in technology also hold some promise to help invoke critical thinking while watching TV. New products and innovations can help to control the rate at which information is delivered, make television a more interactive experience and provide additional information to reinforce what one is watching. Already products are available that allow you to control time through pausing. Such a device is ideal for giving oneself time to reflect on the material one is taking in, paralleling the reading experience. The Internet can offer great opportunities to share perspective as well as consider other's perspective. Imagine a network posting a website after a show in which you can participate in a discussion with people of other backgrounds. For example, if you were curious about what a middle-class factory worker thinks about a special on the new economy, you could access that point of view. Advancements in virtual reality could take you inside your favorite sitcom, so that instead of sitting back and watching, you could be a bystander or even participant. This would introduce the need for planning as a part of the experience. One can imagine the ability to become immersed in another world, as in the motion picture "The Matrix," where the viewer (or rather participant at this point) could have even more control over the environment. To even go beyond that, would it be possible to

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create experiences beyond our normally perceived four-dimensional space and time world? Our eyes project 2-D images that our brains interpret into 3-D. Would it be possible to extend that into other dimensions? Returning to the present, many innovations and new ideas are emerging from MIT's Media Lab, as described by Brand: "From Media Lab perspective, broadcast is not nearly voluntary enough. It's a streetcar: you can be on or off it, and you can pick your stop (channel, station), period. Why can't you drive it like a car, anywhere you want? The immediacy is a problem, too. You have to abide by the streetcar's schedule." (1987, 61). He quotes Nicholas Negroponte, director of the lab, on the future of mass media as saying, "Monologues will become conversations; the impersonal will become personal; the traditional 'mass media' will essentially disappear" (Brand, 5). Regarding what they call "Personal Television" (Brand, 39), he cites graduate student Mike Bove who posits: "I want to sit in an armchair reading the *Boston Globe* or the *New York Times*, and if any of the networks have any pictures to go with the story I'm currently reading, I want them to appear on the TV" (Brand, 40). Incorporating reading together with television could be an effective way to encourage cognitive interaction with television. The possibility of this situation is supported by the development of fiber optic communications, which can provide "Effectively, infinite bandwidth." (Brand, 68). One participant of the Media Lab commented on the potential for this with the statement, "...you could have a combination of television immediacy and newspaper depth and detail available any time through such a medium" (Brand, 68). With proper control over the rate at which information is received, this could be a powerful tool to give the viewer the information that they require.

The manner in which television presents information actively inhibits the viewer's ability to perform

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The manner in which television presents information actively inhibits the viewer's ability to perform a critical evaluation of the information conveyed as well as perform other cognitive tasks such as creative thinking and planning. It is possible, however, to train ourselves to become critical viewers using strategies of metacognition and learning. There is also the potential for advancements in technology to transform television and graphic mass media into more interactive and meaningful communicative events.

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Critical Viewing of Television
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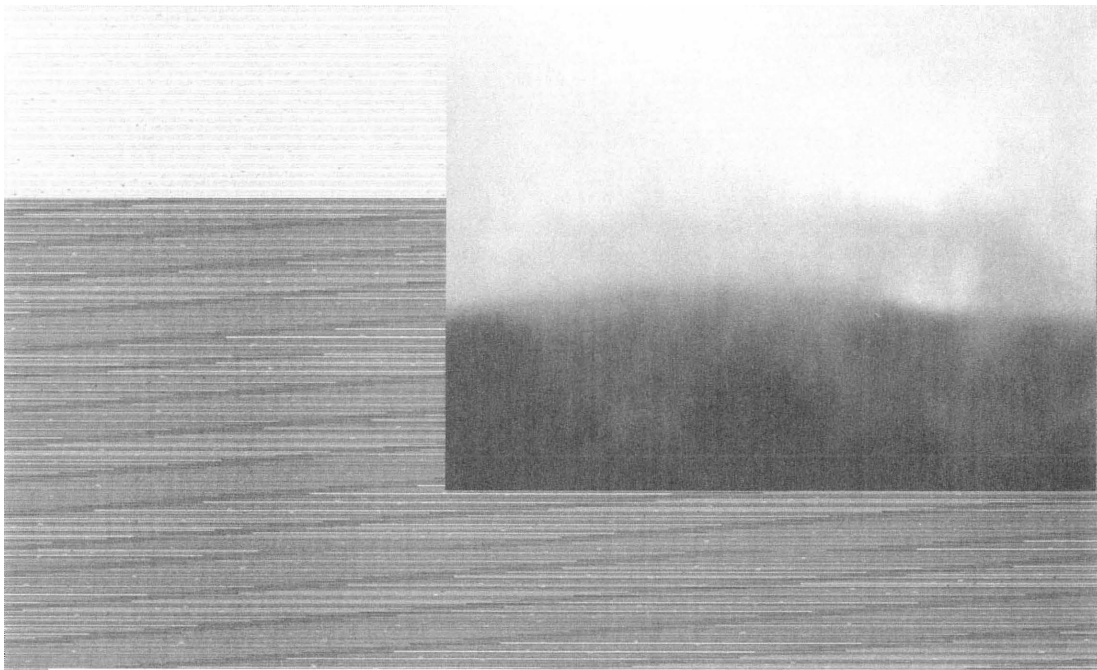
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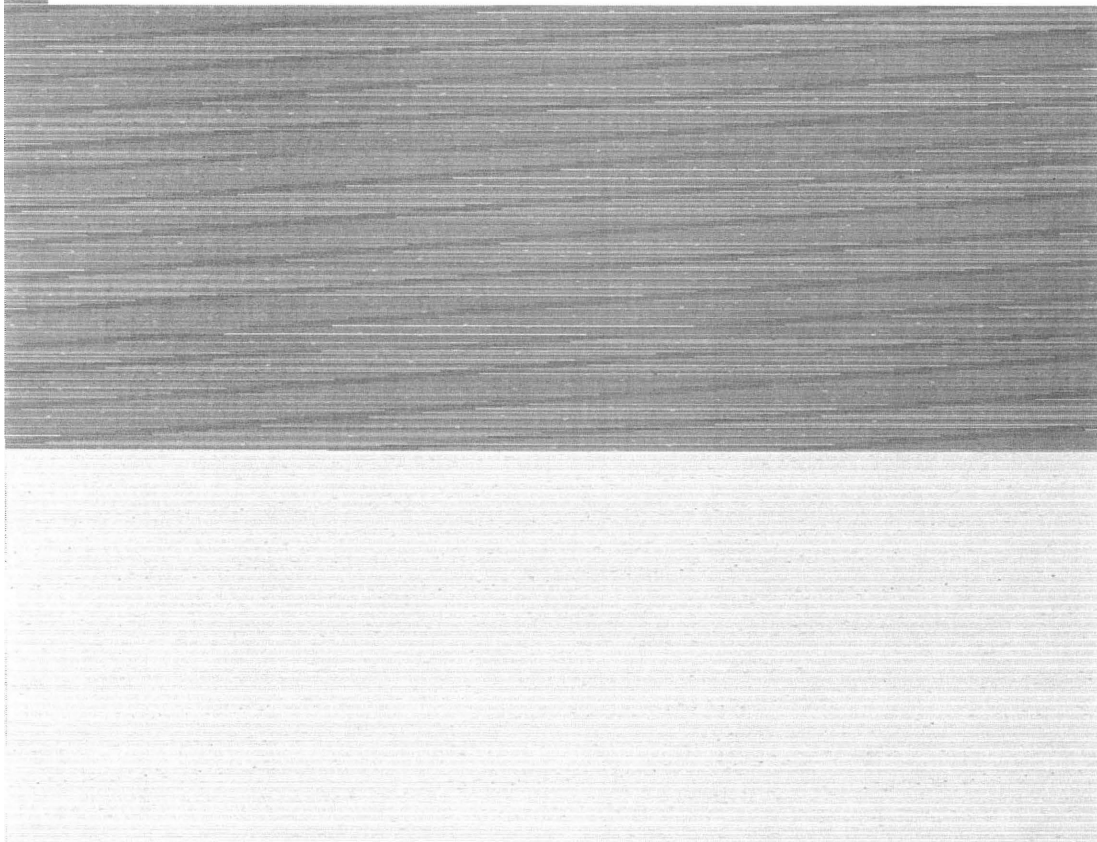
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"The Matrix" motion picture. 1999. Wachowski, L. and A. Wachowski, writers/directors. Warner Brothers.



New Media, Experience and Japanese Way of Tea (Chado)



JENNIFER GUNJI

Biography

Jennifer Gunji is a design educator who is currently an instructor in the graphic design program and the narrative media program at the University of Illinois. Her focus encompasses the various facets of design, which examine both traditional and new media. Her teaching integrates study of Japanese aesthetics in the study and practice of design. She is currently studying to become a tea master under the Urasenke Tradition of Chado. Gunji's web and design work has been highlighted in several international and national publications. Her design work for *@art: an Arts and Humanities Portal* was recently shown at the *Computers in Art and Design Education Conference (CADE)* in Scotland.

Abstract

The philosophy of the Japanese Way of Tea (Chado) can play a significant role in design education. By heightening use of the senses, Chado cultivates inner awareness of self and others through process, form and practice. Established by sixteenth century grandmaster Sen Rikyu, Chado is based on the Zen principles of "harmony, respect, purity and tranquility." This synthesis of ideals becomes a spiritual manifestation of the human soul.

Concentration on the senses is becoming more critical in design. Development of multimedia technologies challenge designers to create more experiential expressions in virtual settings. To accomplish this, one is required to possess advanced technological skills and enhanced intersensory awareness. Inevitably design will come to express olfactory, taste and tactile sensations through a primarily visual setting. This inclination will encourage the generation of design experiences that awaken consciousness, emotions and empathy within their audience. The focus becomes the creation of experiences that are humanized through the sensitivity of designers and their ability to interconnect mind, body, emotions and spirit into design, while developing interaction with the audience.

Establishing Japanese aesthetics as a fundamental experience in design education will prompt students to cultivate their sensory perception, sharpen their aesthetic understanding, heighten cultural discernment and enrich their ability to create and express what they experience. Exposure to these ideas will inspire students culturally, intellectually and spiritually which ultimately contributes not only to their understanding of design, but also to appreciation for life.

As a student finishing her master's degree in graphic design at the University of Illinois, I have experienced, first hand, the evolving predicament of design education. With the influx of new media programs across the nation and the demand of students to integrate these programs into existing graphic design programs, the state of design education has become rather indeterminate and unfocused. Many students are captivated by and desire to be further versed in new technologies, which allow for an expression of design in new terms: design as interaction and experience versus design as layout. Yet, many graphic design programs are unable to provide students with instruction in the flourishing areas of web and multimedia design.

Thus, students leave with a background primarily focusing on traditional print-based design and with only light exposure in the world of new media.

Like many universities, my graphic design department is undergoing the same identity crisis in terms of relinquishing parts of tradition and opening a willingness to embrace a needed redefinition of thoughts, languages, methodologies, processes and tools. With the subsequent advancement of new media and technologies, the teaching of graphic design has been ultimately faced with significant decisions concerning how to position itself in a hypermedia environment. This program, no different than many others, has struggled to iden-

make

A FUSION OF FORM AND CONTENT

tify with the changing climate of design. Due to the lack of faculty proficient in technical skills, the program has no option but to resist forging new structures of multidisciplinary studies that focus on new media.

In my graduate studies, I am not seeking answers, but I am expecting to shape the context for current and future design pedagogy. Instead of waiting for new ideas to be embraced by the graphic design department, I would like to participate in the development of new ideas, in shaping new programs and in redefining the field of design. Many students feel that they are being forced recipes for education, as defined in design cookbooks from twenty years ago. I wish to add my own recipes to the book, by defining a future of design with expanded goals, philosophies and deliverables. Ultimately, I feel I am part of the redefinition of design education and thus what it will become is a personal responsibility.

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I entered the graphic design program to develop new ways in which design could be made a part of our daily lives. I am not interested in "making things pretty" nor am I interested in developing the "catch-all" end product. I came with the intention to further focus upon the possibilities of design, without concentrating upon a specific media. What I

discovered was that I was becoming a product of a traditional design program that failed to encompass my interests and goals because the program itself had lost direction in the confusion of the changing climate of design education.

The lines between art and design, research and product, conceptualization and content, teaching and learning need to blur. I am seeking the understanding and exploration of design as an experience. Graphic design can no longer be limited to an orchestration of text and image. By introducing dimensions of sound, space and time, the study of design has evolved into the creation of experiential expressions of reality. To do this successfully, one is required to not only possess advanced technological skills but an enhanced intersensory awareness and intellectual willingness to explore and challenge the possibilities. These technological demands lead to a need to create and develop designs that embody more human-like experiences through the visual and the aural, moreover, it will also be increasingly critical for designers to express olfactory, taste and tactile sensations through a primarily visual setting. The current need is for students to become "adept at the traditional skills of design, and engage in dialogue with the virtuosos in the world of social science, economics, architecture, theatre and the narrative arts."¹ Thus, design education must be willing to reformulate the teacher-student dynamic (understanding that learning and teaching

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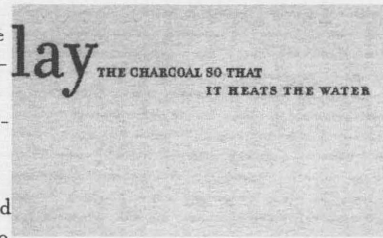
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becomes more collegial), build teaching strategies that focus upon concept / content development, explore new forms of expression which allow freedom of experimentation, and finally, see design as experience rather than layout or product. Focusing upon experience and interaction, design must begin to willingly encompass the use of elements beyond pure layout: sounds, emotions, feedback, motion, time and behavior. Design is more than a one-way experience, but rather a two or even three way conversation. The inclination is to encourage the development of web or multimedia experiences that awaken new depths of consciousness, feelings, emotions and empathy within the audience | participants. The elemental focus becomes the creation of an experience that is humanized through the sensitivity of the designer to interconnect her/his mind, body, emotion and spirit into design, but also with full understanding of how the design will relate and develop interaction with the audience.

Redefinition of design education becomes increasingly important in light of global culture. The World Wide Web allows for unprecedented communication. As these new means of interaction emerge on a daily basis, design if present, can frame those interactions aesthetically, functionally and emotionally. The future of design lies in our understanding and exploration of interaction.

For over ten years, I have been studying the discipline and philosophy of the

Japanese Way of Tea (Chado). Chado is a means of cultivating an inner awareness through respect for process, form and practice. Beginning my design studies simultaneously, this synthesis of abstract ideas is naturally manifest in my study and cultivation of design. As a means of broadening awareness and appreciation for a diversified viewpoint of design, my exposure to Japanese aesthetics and



philosophies, with the primary focus on Chado, gave a new understanding of diverse cultures and their impact on design. It also inspired me to examine my own culture with more scrutiny.

What I discovered was that this combination of studies and disciplines was fully applicable to further understanding and exploring interaction in design. I began to develop and apply teaching techniques that explore thinking, seeing, understanding and experiencing as it relates to Japanese aesthetic teaching methods and how it is relevant to the study and understanding of new media

and design education. Traditional Japanese techniques do not rely upon notes or other mechanical means to help a student. It is based on repetition of principles in different forms that underscore

make

A DELICIOUS BOWL OF TEA

the realization that things *are* and we must, as creators and receivers, learn to recognize the subtle forms and variations of that which is communicated.

Japanese aesthetic theories provide abstract ways to perceive the world. The abstract means maintain itself independently from the material form. Things imply materials. However, things do not imply thought. Thought will last beyond the lifespan of an object. In most forms of Japanese art, it is the individualized responsibility of receivers to identify the relationships to these forms of art. The study of Japanese aesthetics maintains that it is easier to understand the abstract than it is to try to understand the theories of the material. Material forms are manifestations of ideas. With this comprehension, one is able to remanufacture those ideas by producing or applying it to another object. We no longer focus on the end product, but the conceptual

process explored to develop that product. In the study of the Way of Tea, although serving a bowl of tea with utmost respect to a guest is the ultimate goal, it is the understanding and application of the process that becomes most critical.

Although the study, practice and experience of the Way of Tea may seem extremely far-reaching in relation to developing web or multimedia design, I believe that the interconnection will be clear with continued technological advances. As students of design, it is necessary to have sharpened technological skills and enhanced sensory skills that enables the evolution of connections and experiences without alienation or removal of the senses. A means of balancing the two and also cultivating the latter, can be done through the study and understanding of the Way of Tea. The study of the Way of Tea encourages a heightened use of the senses. Concentration on the senses is and will continue to become more and more critical in the practice and understanding of design.

My goal is to further develop the significance of Japanese aesthetic education as an essential experience in teaching the study of art and design. I believe that the philosophy and understanding of the Way of Tea, as a primary aspect of aesthetic education, is basic to the quality and appreciation of life. It is within the framework of the Way of Tea that students are asked to cultivate their sensory perception, sharpen their aesthetic understanding, elevate cultural discern-

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ment, appreciate the moment and enrich their ability to create and express what they experience.

Focusing on the development of interconnecting the study of design and the Way of Tea, this unification provides a necessary balance between what is rational and systematic to what is emotional and what prompts such reactions. It introduces and recognizes the connective fiber between the mind, heart and spirit as a means of enriching ones' perspectives and capacities to experience life. My interest is to heighten student's sensitivities through experience. This heightened sensitivity provides the means to create design experiences that further scrutinize the process of development to fully account for the audience, rather than focusing solely on the end product.

When experiencing tea for the first time, participants are often left with a sentiment of beauty and tranquility through their heightened senses, which is beyond their everyday realm. It is not a customary form of art or design here. Yet, in its most simplified form, it is an everyday occurrence in which we are all participants—washing, cleaning, making, serving, organizing, seeing, interacting, etc. We generally make such ordinary actions unconsciously. But through its ritualization, establishment of process and form, and philosophical recognition and implications these common everyday actions through the Way of Tea are elevated into an art form. Through single-mindedness of practice and

understanding, and by surpassing the conscious effort to have perfect form, Chado enters a realm in which art becomes a way of life. The study of tea focuses on the development of the human spirit. This is something that we can naturally strive for on a daily basis, however this is rarely the case. We are often forced to amass information and knowledge and simply store it in our minds. The study of the Way of Tea, as everything else in life, also obligates us to acquire new knowledge and information; however the central focus does not remain that accumulation. Rather, the

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| clarification | | | art | | aesthetic | |
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| essence | | | creation | | change | |
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| inner | | | individual | | experience | |
| intellect | | | order | | function | |
| mind | | | restraint | | heart | |
| outer | | | ritual | | hierarchy | |
| simplicity | | | selection | | interaction | |
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HOUSE AND DEWY GROUND
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 HOW WILL THAT PA
 THE DUST FROM WITHIN

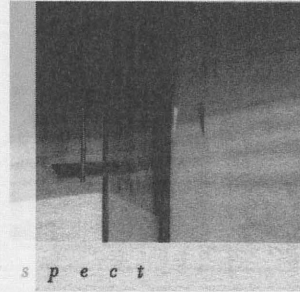
attention is on the process of knowledge accretion as it relates to our emotions and our spirit. The process is not only inclusive of the intellect, but embodies and requires the very elements that provide us with human interaction.

In the Way of Tea, a person is confronted with the awareness of Space — the physical space (architecture), the mental space (metaphysical) and the spatial relationships between objects, elements and ideas (frame of mind | way of thinking). The architectural structure or setting of tea is often referred to as, "sukiya." Sukiya becomes a space in which one experiences the ephemeral, recognizes its fleeting nature and accepts its true concept as "nothingness." Ultimately, the idea sukiya becomes the manifestation of non-spatial space. It is no longer the physical space on which we place emphasis, but the idea of the space. The actualization of the space is fully dependent on the means of its use by human beings. Sen Rikyu, tea master of the 1500's, "brought together the tea ceremony and the human element in a new and simple form of space in which the person was the central theme rather than the style of architecture. This space creates an atmosphere soothing to humans and has been preserved in the tradition of sukiya architecture."² Rikyu also established the "roji" or pathway to the teahouse, which further perpetuated the idea of isolating the physical space from the everyday world. The physical act of walking on the roji is the mental act of detaching oneself

from the outside world of current concerns and obligation. In reflection, one could perceive the act of entering the World Wide Web as a similar notion. The teahouse was specifically established to be a physical space in which tea was practiced. Moreover, the sukiya was established as a metaphysical space in which people could seemingly escape the everyday world into a space or setting, which was carefully orchestrated through selection of objects, elements and messages, to form the "total experience" for the participants.

Early Japanese sense of space was viewed as "system of places, i.e. spatial and temporal events, separated by homogeneous non-place."³ Interestingly, this same ideology can be passed on to the reflection of cyberspace and how people relate to that space. Cyberspace only truly exists when humans visit that space. The tearoom may physically exist with no participants, but to exist as it is truly intended, it can do so only with the participation of humans. Furthermore, this idea re-emphasizes that existence in cyberspace is more about a holistic experience than a surface glance. It is a mental immersion of our senses in virtualization. It is thus the utmost challenge of the designer to utilize their understanding of how to create a physical atmosphere in relation to a cyber atmosphere. As in cyberspace, there is no true sense of past or future, but the ultimate focus is the immediate. The Way of Tea continually emphasizes the ephemeral qualities of life. It views life as a fleeting

art
association
creation
etiquette
humanity
individual
order
restraint
ritual
selection
spirit
study
surrounding
tradition
utensil



r e s p e c t

yourself, your client, your audience
the medium, materials, type and images
the concept - how it affects an audience intellectually,
culturally, and functionally
tradition - understanding what has been established

clearing excess thoughts or preconceived ideas
 full focus on task at hand
 allows for us to see the true essence of all things
 creates an established, natural order
 each design has a unique solution

p u r i t y

coming together of interactions, elements, thoughts and chances. By doing so, the exchange between the receiver and the creator (guest and host) becomes all the more fulfilling. As designers of new media, we should consider embracing these ideas in hope to create experiences that affect the receivers' consciousness and enables them to become immersed as participants rather than mere spectators.

Students of design must learn by the physical act of doing and thus, learn to question and inquire appropriately. It is not only through presentation of theories and philosophies, but through physical practice that students will learn to ask the questions that they need to define. They learn to feel the questions that should be asked. They question because they conclude that they need to know the answer. They question because they have intuitively learned what questions to ask. They begin to make the relationships on their own through inquiry and find suitable ways to further develop designs conceptually.

Japanese aesthetic teaching methods also nurture intuitive creation. Intuition relies on the comprehension of each element and how they interrelate not only outwardly but also inwardly. The outward manifestation is only a result of developed inward reflection and understanding of one's own expression. It is this reflection that enables us to give new meaning to form. Creation becomes the mental and emotional unfolding of one's personality and understanding. The process becomes a part of who one is.

Understanding self, enables one to see others in a different light. We create because we develop an understanding as to how this design relates to an individual as a person rather than as an external and isolated entity.

These teaching methods transcend the simple imparting of information and skills. They engage students in seeing such studies as a comprehensive attitude to life, which embraces their soul and spirit. These methods expose students to a way of thinking, seeing, understanding and experiencing that possess spiritual, artistic, moral, philosophical, disciplinary and social significance. This teaching presents to students a way of conducting life. The significant aspiration of these methods becomes the revelation of one's sincere and pure heart, mind and spirit. It is not the perfection or mastering of technical skills or production, but it is the process focus itself. The result is the productive and thoughtful communication or interconnection that can be made between the creator and the receiver. Through the single-mindedness of that purpose, this study becomes the study of the way of life rather than concentrating only on to art or design. It becomes a way of conducting human behavior and relationships. In this viewpoint, it becomes a manifestation of all that is universal.

There is much more study and exploration that can be done with regard to this way of thinking and its application to teaching. The relationship is there. Acknowledging its existence is the first

step. A different way of recognizing relationships between seemingly disconnected elements and ideas and how to present those findings in the vehicle of teaching is the goal. There is no solution or formula, but merely ideas and thoughts that can guide students of design to see, think, feel and experience learning in a way that may not have been introduced or recognized.

This method cultivates inner awareness through respect to process, form and practice. Exposure to these ideas enables students to heighten their sensitivities through experience. Through such teaching, the goal of design education is not to train students, but to enable students to make aesthetic judgements guided by their own convictions and realizations of life and how they view it. Through this awareness, an individual can achieve a new way of seeing, understanding and giving sense and order to her/his life.

**New Media, Experience and
Japanese Way of Tea (Chado)**
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Design is the fusion of form and content, the realization and unique expression of an idea. Design entails a part-whole relationship expressed in terms of facture, space, contrast, balance, proportion, pattern, repetition, scale, size, shape, color, value, texture, and weight. These are the means; unity, harmony, grace, and rhythm are desirable ends.

Visible Language, 35.3
Gunji, 278-291

This list of means and ends has been cited so often that it has almost lost its meaning. However, these very considerations are what ultimately distinguish art from non-art, good design from bad design. Furthermore, perfection in design depends on the integration of all ingredients. Since such ingredients are inexhaustible, perfection is really unattainable.

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Rhode Island School of Design
Providence, Rhode Island 02903

Implicit in all this are inventiveness, intuition, judgment, and experience.

Endnotes

¹ See www.experience.aiga.org/expdesign/index.html

² See www-rrt.meijo-u.ac.jp/a/semi/mshimizu/index2.html

³ NUTE, KEVIN. *Relativity, Cyberspace, and the Sukiya*. *Chanoyu Quarterly*, 87, 45.

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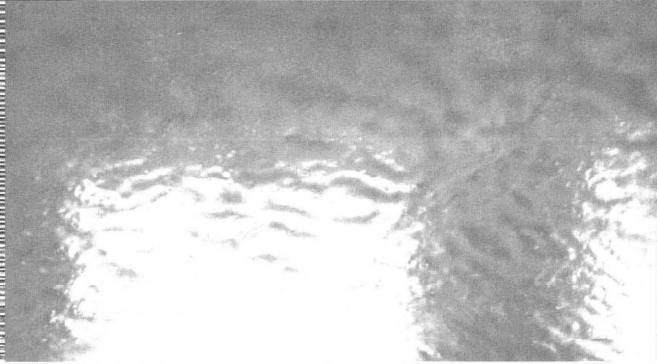
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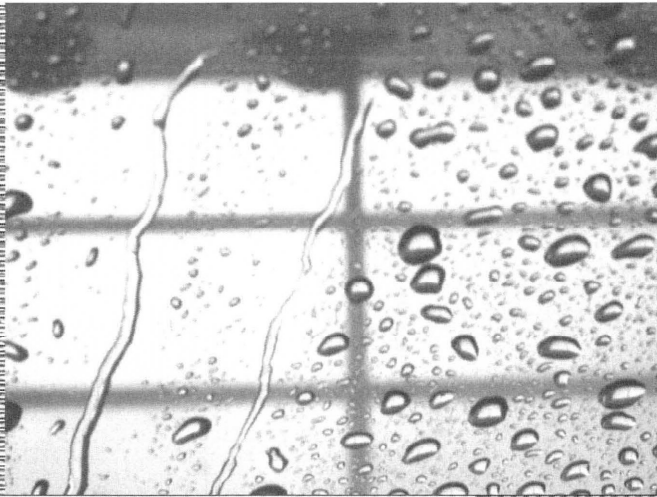
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Books: Received and Reviewed



WRITING WITH LANGUAGE AND
BY HAND

Rethinking Writing

Roy Harris

Bloomington: Indiana University Press, 2000

270 pages, hardbound, \$39.95

ISBN 0-253-33776-3

The author is professor emeritus of General Linguistics at the University of Oxford. He argues against the position originally formulated by Saussure that writing is a visual transcription of speech. Going even further, he argues that writing is a more powerful form of language expression than speech. The first three chapters present an historical overview from Aristotle through Saussure investigating speech as the primary mode. Lack of a sign theory until the late nineteenth century is also factored into the discussion along with the importance of notation systems, authenticity and record keeping. At a time when technology increasingly offers written or spoken information with their various differences and affordances ignored, this book provides a much needed perspective.

Handwriting of the Twentieth Century

Rosemary Sassoon

London: Routledge, 1999

208 pages, illustrated, one color, softbound,

\$27.99

ISBN 0-415-17882-7

In the past decade Rosemary Sassoon has written a number of books on handwriting and its problems. In this book she develops a history of the past century's ideas, conflicts, models and pedagogy regarding the teaching of handwriting. Sensitive to children's frustration in learning from a handwriting model that may not suit their tools or bodily rhythms, she is nevertheless a pragmatist and realizes that a model is necessary at the start. She hopes for the development of an unobtrusive one — one that allows for personal variation. The book is well illustrated with writing models, written documents and developmental comparisons. Sassoon is almost single-handedly developing the literature on this important topic.

DESIGN & TYPOGRAPHY

Type in Use — effective typography for electronic publishing

ALEX W. WHITE

New York: W.W. Norton, 208 pages, \$26.95
ISBN 0-393-73034-4

"...From headlines to captions, print to web type and folios to footlines *Type in Use* explains the principles of *designing pages with type* and shows carefully selected examples from a wide variety of current publications. *Type in Use* is an accessible guide to effective editorial typography that will widen the horizons of typographic possibilities for the experienced designer and elucidate the principles of *good design for the beginner*."

Introduction

Picking up this book for the first time and glancing at the title *Type in Use — effective typography for electronic publishing*, you might be forgiven in thinking this is a book dealing with the universal problem of finding answers to the designing of a wide range of publications, a view emphasized when reading the three page introduction.

Although this book is primarily offered as a guide for effective typography for electronic publishing, the all-embracing term publishing used to describe the contents is rather misleading, more precisely what the book is concerned with is the practical tasks required to design magazines and house journals.

From the very first page of the introduction, the reader is reminded that computers and desktop publishing software can by their very nature and flexibility more or less guarantee the production of ugly documents, particularly if untrained persons, or beginners, are in charge of the design process. It is an observable fact that over the ten year period since the first

edition was published standards of typography and design have both deteriorated and improved — probably in equal measure — in both North America and in Europe. Unfortunately there is no follow up suggestion or remedies on how feasible it might be for the beginner to realize — or even attain — professional design standards, once computer typesetting and production equipment is universally available to anybody who buys a system and has some keyboarding skills.

The author has written a book with detailed typographical information, that is essential for producing well-designed and readable magazines or newsletters. The contents of the second edition are more or less identical with the first. The original ten chapters are retained, dealing as they do with such topics as: *text setting, headlines, sub-heads, breakouts*, (an American term, meaning part of an article presented as display type) *department headings, covers, contents, bylines, folios and footlines*. There is a short and useful glossary, which is helpful in looking up words familiar only to American readers.

There is one new chapter, dealing with the now important issues of web typography. This being written with the clear view that this new media is essentially an extension of conventional publication design, but with some fundamental structural differences. This chapter is short, well written and essential reading if, as a designer you are faced with designing web pages and want to avoid some of the worst pitfalls. Although the first edition had a higher quality of production than the

second, with better quality paper and cleaner presswork, both editions demonstrate good design and editorial decisions.

The way the book is structured, follows exactly the same hierarchical order that is used when reading or designing a magazine, a useful technique for understanding how the book works. Chapter one therefore deals with overall page planning and text setting, while chapter ten details the techniques of placing folios and footlines.

Each chapter has a sensible non-partisan introduction to the practical issues involved, with a commentary on each of the design solutions printed in red, alongside black and white reproduction of the actual pages being discussed. Taken together this technique weaves a continuous narrative through each chapter, as well as showing how a cross-section of designers went about solving the problems.

For the professional design student, this book will serve as a valuable source of information, giving as it does a clear insight into the kind of thinking and design decisions required to be taken.

A Nagging Doubt

The one nagging question that remains is this: How is the second target audience — that is the beginner — expected to match the professional skills shown in the work reproduced in this book? True, as inspiration, there are well over 300 examples showing how the professionals go about it and detailed accounts of the problem at hand. But in the long run there is no

Books and Pages, Polish Avant-garde and Artists' Books in the 20th Century

Piotr Rypson

Warsaw: Center for Contemporary Art, 2000

168 pages, illustrated, full color, hard paper-back, \$35.00

Available from P O Box 796, 00-950 Warsaw, Poland, ISBN 200083-88277-36-7

A beautifully produced book, *Books and Pages* examines Polish avant-garde production in the context of international art and design. It is a celebration of a culture that continued its creativity and dissent during a repressive regime, finding ways to connect to ideas despite formidable obstacles. The twentieth century and its various movements are well represented here with strong and colorful Polish books, handbills and experimental poetry. Much of this work has not previously been seen. The late century work is as strong as that of the early years. The book is a pleasure to view, to read (English) and to examine as a design that carefully balances what is shown and what is said.

Designalltag —

Symbols, Logos, Identities

Rüegg, Ruedi

Zurich: Designalltag, 1999

76 pages, illustrated, one color, paperback, free upon request

ISBN 3-9520297-1-8

This is a promotional catalog featuring thirty-three visual solutions that involve typography and/or symbolic elements for various clients. Modernism marks the work which is modestly but carefully presented.

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dotlinepixel — Thoughts on

Cross-Media Design

Michele Jannuzzi and Richard Smith

Switzerland: Gabriele Capelli Editore

44 pages, illustrated, some in color, hard-bound, ISBN 88-87469-00-8

Reflections on technical problems in relation to communication are usually boring or discussed intensely, if unresolved, over a drink or waved off by the creative to a technician to handle. This is not the case in this small

hint or suggestion of how the beginner will achieve the necessary design and computer skills to match the work shown. Only in chapter eleven, the one that deals with web typography does the author address some of these issues of transferring skills from one set of people to another.

It is very easy for professional designers to assume that the hard earned skills that they have acquired over long periods of time are easily transferable into the heads of those new to design. One is reminded of the legendary Funnel of Nurnberg, where it was said that all you need to do to make people wise quickly was to pour knowledge in; an approach that many typography textbooks adopt. Indeed this is the self same approach taken by the authors of today's modern computer manuals, which often run to hundreds of densely packed pages and are more or less impossible to use.

The full understanding of a particular desktop software package, coupled with a mastery of the skills of the typographer is the issue. Full time education achieves these objectives by educating students in visual awareness, as well as computer technology. In the real world the majority of non-designers have little chance of studying such courses and will usually have to settle for some part-time training program where they might be taught a few visual tricks.

While desktop publishing software makes many design activities easier to perform, of itself it can't give you any typographical skill or knowledge. And, without appearing to state the obvious, when using any desktop publishing software, unless

you 'declare' each of your design decisions (that is actively instruct the software to do what you want), all the design and typographical decisions will be decided by the original default settings and values built into the software. These determine everything from the measurement system used, the proportions of the margins, the typeface and the point size selected.

These are some — but not all — of the stumbling blocks that beginners have to overcome, if they are going to produce work of a high visual standard. It might have been helpful, if there had been at least one illustrated design and production case study, showing in detail how one designer went about solving the problems involved. The case study could have also shown each of the electronic specifications for all the programs used in the magazine's production.

Reviewed by Graham Stevens who enjoys complex book design and is at present engaged with a Lexicon of Church Music in Danish.

book. Here the designers intelligently reflect on the technical problems of new media and how to resolve them through media understanding, visual skill and strategic communication. The book is a sophisticated graphic statement with insightful remedies to frequently encountered media problems.

Emotional.Digital — A Sourcebook of Contemporary Typographics

Alexander Branczyk, Jutta Nachtwey et al, editors

London: Thames & Hudson, 1999.

312 pages, illustrated, full color, hardbound, \$50.00, ISBN 0-500-01925-8

This is primarily a visual resource for the typographically hungry. The editors invited fifty companies "that most strongly influence the international type industry to submit their best printed matter and visual materials for reproduction. Here, side-by-side, is everything from the classic to the avant-garde in letterform and typographic systems. Some brief essays by type designers such as Gerard Unger, Ian Swift, Zuzana Licko and Erik Spiekermann appear here and there throughout the book. This is an exuberant and sometimes ironic celebration of the latest typographic revolution in a beautifully produced book.

The Form of News

Kevin G. Barnhurst and John Nerone

New York: The Guilford Press, 2001

326 pages, illustrated, one color, hardbound, \$35.00, ISBN 1-57230-637-8

The authors trace the history of the newspaper in the United States in terms of its role in civic life as how it has succeeded or failed in its democratic mission. The evidence for its evolution is viewed through ways of writing, content organization, typographic style and control, picture use, space allocation and orientation. The authors describe the current function of the newspaper as "a virtual backdrop for the drama of daily life."

On Book Design

RICHARD HENDEL

New Haven: Yale University Press, 1998, 210 pages, illustrated, one color, hardbound, \$35.00
ISBN 300-07570-7

Most people reading this review will read and handle several books a week. How are these books designed? What do we know about the effective presentation of text?

In Richard Hendel's *On Book Design* there is an opening chapter that discusses these issues, and this is followed by a detailed illustrative example. Eight award-winning designers then describe how they each designed a particular book. The book as a whole is designed by Hendel, and in itself provides a further illustration.

There are now (at least) three books like this. In 1965 Marshall Lee edited *The Trial of 6 Designers* (Hammermill Paper Company). Here six designers presented their solutions for designing the first 24 pages of Kafka's *The Trial*. (Some extracts are given in Hendel.) And in 1977 William

Kaufmann edited *One Book/Five Ways* (William Kaufmann Inc.). Here five American University Presses outlined their procedures for acquiring, editing, designing and distributing books. All five illustrated how they applied their procedures to the same example text — in this case a book on houseplants.

These two earlier books, together with Hendel's, differ in many ways. Lee's text is concerned with the design of a novel. Kaufmann's text is about the design of information. Hendel's text offer solutions for a variety of texts, including a textbook, a novel, an exchange of correspondence, an art show catalogue and a poetry collection.

In both Lee's and Kaufmann's texts the separate designers worked with the same materials. Thus what the reader sees are differences between design

TABLE I.

Solutions adopted by six different designers for the main body of the text in Kafka's *The Trial*. (Note: Hendel provides examples of the six opening pages for Chapter One.)

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| Designer | Typeface | Typesize /spacing | Setting |
|----------|--------------------|-------------------|-------------|
| 1 | Linotype Scotch | 11.5 on 14 | justified |
| 2 | Linotype Palatino | 10 on 13 | justified |
| 3 | Times Roman | 10 on 14 | justified |
| 4 | Linofilm Helvetica | 8 on 12 | unjustified |
| 5 | Monotype Emerson | 12 on 16 | justified |
| 6 | Linotype De Vinne | 10 on 13 | unjustified |

solutions for the same texts. But the methods used for creating the two books are very different. In Lee's text, in contrast to that of Kaufmann: *'The ground rules were uniform... Copy, size, paper, printer and time available were the same for all; also the requirements that everything be within the practical limits of tradebook publishing.'* (9).

Thus the differences that appear in Lee's text stem solely from the approaches and styles of the six designers. Table I summarizes some of them. It can be seen that none of the designers used the same typefaces and only two of them used the same setting for the inter-linear space of the body of the text.

In Kaufmann's text, although the starting manuscript was the same for each publisher, there were none of the constraints that were imposed in Lee's text. In Kaufmann's text each university press described its own procedures and each designer had a free hand. The reader can make comparisons between costings, production schedules and other features, as well as between specifications for and examples of the text itself. Table II lists some of the differences between the proposed solutions. There were differences in page-sizes, typefaces, interlinear spacing and methods of binding. However, all five designers specified a two-column unjustified setting, in portrait style.

Hendel's text is more like Kaufmann's, in that each of the nine designers in the book made their own decisions. However, here each designer worked on separate texts and all nine were actually published. This contrasts with the examples given in Lee

Iconic Communication

Masoud Yazdani and Philip Barker, editors
Bristol, United Kingdom: Intellect, 2000
204 pages, illustrated, one color, paperback,
£14.95
ISBN 1-84150-016-X

Icons have become an important part of everyday life for wayfinding in both real and virtual space. They are also accompaniments to text that help us remember resources. The editors have compiled in this volume fourteen essays covering some communication theory basics, some history of iconic communications, use of icons as textual and diagrammatic components, screen-based icons, user-created icons and some empirical research studies relating to icon evaluation in the digital arena.

The New Graphic Design School —

A foundation course in the principles and practices of graphic design

Alan Swann
New York: John Wiley & Sons, 1999
192 pages, illustrated, full color, softbound,
\$39.95
ISBN 0-471-28834-9

This is a learning by doing approach to graphic design in three chapters. In the first two chapters, each principle is briefly discussed and demonstrated, accompanied by "tips" and exercises. The third chapter presents professional practice in corporate design, editorial design, packaging and advertising. The "tips" continue in this chapter but now the student has project assignments. This is a streamlined approach to teaching the basics. What is lacking is a philosophic position and an ethics and aesthetics of design in relation to communication practice.

Palabra de Tipografía

(Word of Typography)

Sayri Karp, Diana López Font and Matt Madden, editors and translators
Mexico: Libros del bosque, 1999
176 pages, illustrated, one color, softbound,
limited availability

After I made a presentation at a conference at the Universidad de las Americas in Cholula,

TABLE II.
Solutions adopted by five different designers for the design of a book on houseplants.
(Note all the designers chose a two-column setting with unjustified text.)

| Press | Page-size | Typeface | Typesize/Spacing | Binding |
|-------|-----------|--------------------|------------------|---|
| 1 | 6 x 8" | Garamond | 11 on 13 | spiral |
| 2 | 4 x 6" | Palatino Bold | 9 on 11 | jacketed hardcover |
| 3 | 5 x 8" | Helvetica | 10 on 13 | paperback slip case |
| 4 | 6 x 9" | Goudy Old Style | 11 on 11 | jacketed hardcover |
| 5 | 7 x 9" | VIP Sabon | 10 on 12 | unjacketed preprinted cloth cover |

and Kaufmann which, although undoubtedly interesting, present only the results of intriguing exercises.

So these three books have many similarities and many differences. Nonetheless, each provides examples of the book designer's art. Furthermore, with Hendel, we have running commentaries by the authors on the processes involved. What can we make of these?

300

Personal accounts are always fascinating, and Hendel's book is 'a good read.' But Hendel himself tries, I think, to be so balanced that he is all things to all designers, and thus it is difficult to learn from him. He certainly offers no firm guidelines to novices looking for easy solutions to effective book design. Consider the following quotations:

It would have been much easier to write this book years ago. I was certain then about how typography and how books should be designed. Now, after three decades of experience, I am more uncertain than ever about how to design books. I have no design philosophy; I subscribe to no theories of typography; I am willing to try anything (and often do, to my peril); I no longer know what the rules are supposed to be. (Preface xi)

These days I am trying to take my own advice. I aim for typographic celibacy — no fooling around... I have to struggle to stop myself from adding too many ornamental rules or letting my typesizes balloon and multiply. (Chapter 2, 80)

Nonetheless, words of advice are given in Chapters 2 and 3. These chapters offer lucid accounts of the problems

facing book designers. Hendel clearly is a skilled designer despite his ambiguity. So what can we learn about book design from reading this book?

What we see is the wisdom of accumulated knowledge. Every decision made by Hendel is based upon experience — experience in designing particular kinds of book, in using particular typefaces and in knowing what will work and what will not work as soon as it is tried out on paper.

The choice of the main typeface for a book is not an idiosyncratic one — although it may seem so from Tables 1 and 2. It is clear from Hendel and his contributors that designers read a good deal of the manuscript to get the flavor of the text before choosing a particular

Mexico that focused on information design, a man came up to me and offered me this volume. I thanked him and only later had time to open and explore the gift.

Where publication details usually reside, I found the following statement: "The mission of *Libros del bosque* is to salvage the sheets of paper that are left behind in manufacturers' warehouses. An excellent way to make use of this scrap paper is publishing small volumes of poems, essays, short stories and design."

So this is a recycling activity in the most poetic sense — turning waste paper into communication reflections and provocations. A bilingual edition in Spanish and English, the book is carefully but modestly produced. Each spread is designed by a different designer, many of whom are known internationally, but all are constrained to a simple set of rules: verso — statement about typography/letterforms in two languages, identification of the designer and type font; recto — example letter.

Curious about the designer's selection of alphabet characters, I performed a little census and found that capital O and Q, along with lowercase g were the most used letters. Close behind was lowercase a. Not used were: Bb, Cc, d, e, F, G, J, Kk, Ll, m, p, q, r, t, Uu, Vv, w, Yy, and Zz. I wonder why these letterforms were overlooked. The book celebrates typography and unites those with passionate interest in its forms. (I look forward to subsequent editions of *Libros del bosque*.)

La spirale, la main et la ménorah

(The spiral, the hand and the menorah)

Philippe Apeloig

Switzerland: Gabriele Capelli Editore, 1999

36 accordion-fold pages in a gatefold cover,

illustrated, three-color, softbound

ISBN 88-87469-01-6

In this small, carefully produced book, the author reflects on the development of a visual identity for the Museum of Jewish Art and History in Paris. The brief, descriptive and reflective text is presented in French and English. It describes the author/designer's thoughts regarding the exploration of key symbols and their transformation into an appropriate identity. Sketches, references and a sense of designerly process mark this production.

typeface for the body of the text. There is much discussion of the strengths and weaknesses of "allusive" typography — matching the face to the period, style and topic of the book in question.

The choices of typefaces, typesizes, line-lengths and interlinear spacing are determined not only by the nature of the text but also by the chosen page size. (I was surprised to read that in many cases the publishers made this decision first and then specified it to the designer. Other decisions are also pre-empted if the book is to appear in a series with a standard format.)

Furthermore, a good deal of time is spent singling out particular elements in the text (e.g., chapter headings, running headings, examples) especially if they vary in their length. The design of the title and the contents pages also receive particular attention. And finally, to my surprise, some designers spend a good deal of time designing the copyright information that comes with every book.

Readers, of course, often do not notice the effects of all this effort. This, in one sense, must be a source of dis-

appointment for designers. In another sense, however, it can be a source of satisfaction. Designers must be getting it reasonably right if they do not offend their readers. Hendel's text supports the view that there are no simple rules here — each book is different — but that there are underlying commonalities of approach. Readers interested in these matters will learn a lot from Hendel.

James Hartley is Research Professor of Psychology at the University of Keele, UK and a member of the journal's advisory board.

LETTERFORM

**Alphabets to Order, The Literature of
Nineteenth-Century Typefounders' Specimens**Alastair Johnston*Newcastle, Delaware: Oak Knoll Press, 2000**214 pages, illustrated, one color, hard-bound, \$39.95**ISBN 1-58456-009-6*

The author, a transplanted Scotsman in California and founder of the Poltroon Press, combines typographic scholarship with literary criticism in this exploration of history. The selected phrases and textual demonstrations that form the content of the type specimens delivers an inadvertent look into the social and political concerns of the past century. The appendix contains an interesting diagrammatic presentation of the lineage of British and American typefounders.

**de la Fréquence des lettres & de son
influence en calligraphie arabe**Vlad Atanasin*Paris: l'Hartmann, Inc. 1999.**192 pages, illustrated, one color, paperback, 110f**ISBN 2-7384-6030-5*

This book is a celebration of arab calligraphy. It examines historic development, technical detail including statistical analyses of letter frequency and the calligraphically possible forms and poetics. The black and white illustrations are well presented. The author has a doctorate from l'École pratique des Hautes Études (Section des Sciences Historiques et Philologiques).

Printing Type Designs — a new history from Gutenberg to 2000

DUNCAN GLEN

Akros Publications, 2001

ISBN 0861 42 1108

[Obtainable direct from Duncan Glen

33 Lady Nairn Avenue

Kirkcaldy, Fife

United Kingdom]

This discursive account of the development of type design, from Gutenberg's unique moveable types to the digital plethora we have today, deals with the broad sweep of design while at the same time penetrating into some of the byways of typography over nearly 600 years. It deals not only with the design and manufacture of printing types, but also explores some of the social and political implications of being a printer or typesetter at certain periods of history. Duncan Glen has read very widely and honorably acknowledges his sources throughout.

Although the book follows an historical sequence, each section explores a particular style through to the present day so that, for example, the chapter on Caslon describes Caslon's original designs, through their revival in the nineteenth century to their recent digitized forms. It does not mention the 1990 font designed by Carol Twombly at Adobe; but observes that Ed Benguet's version, which is good in its own right, owes less to Caslon than the attempt at a 'facsimile' range recently released by ITC.

There are times when the detail is in danger of obscuring the general thread of the argument. The discussion and presentation of the research and opinion of various writers into who did what between Garamond, Granjon, Le Bé, Augereau et al is so exhaustive that you begin to hear

the feet of angels dancing on the end of a six point quad. However this is redeemed by an excellent section on Robert Slimbach's *Minion* and Matthew Carter's *Galliard* each of which is in the tradition of Garamond and Granjon.

The chapters on Baskerville, the development of 'moderns' and the rich harvest of 'fancy' types in the nineteenth century are all enthusiastically described. The chapter on san serifs has a particularly good section on the Bauhaus which refreshingly draws on wider influences on design.

True to his nationality Duncan Glen includes two chapters specifically on Scottish typesetters both of which contain material which will probably be new to many students of typography.

The chapter on the first printers in Scotland describes the interplay between Scottish, French and English printers at the beginning of the sixteenth century and gives a glimpse of the importance of power and patronage to the printing trade at that time.

Early Scottish typesetters in America is strong on the business relationships between founders and their gradual self-sufficiency from European sources of type. The author points out that these Scottish pioneers have been recognized before by both Stanley Morrison and Berthod Wolpe, but this account gives a more complete picture of Scottish-American printing and typesetting.

ing in the eighteenth and early nineteenth centuries.

This book really comes into its own when it begins to explore more recent developments through photosetting to digital production which have not before been so thoroughly described under one cover.

It is good to see names which might be unknown to today's students, such as Robert Harling (now in his nineties), who had such a profound influence in the 1940s and 50s with publications such as *Image* and *Alphabet & Image*.

Also some of the unsung designers from the Monotype Drawing Office such as Robin Nicholas, Patricia Saunders and Ron Carpenter are presented. The work of better known names are also well described from Sumner Stone to Hermann Zapf. The Americans, German and British designers are all acknowledged. Contemporary Dutch type designers fare less well as there is no reference to the pioneer letterforms of Gerard Unger, to Bram de Doos or the Hague School of type design.

The later chapters trace the movement in industrial power from the type-casting machine manufacturers to type designers and software programmers. It is particularly good on the development of digital type and the ramifications within the industry which are as complex as those experienced in the time of Garamond but better documented.

DECODING

Abstract Alphabet — a book of animals

Paul Cox

San Francisco: Chronicle Books, 2001
Unpaginated, illustrated in color, hard-
bound, \$17.95
ISBN 0-8118-2940-5

This is a charming book for those interested in cryptography — like early readers who work to decode the alphabet, puzzling over the forms of the characters and their respective sounds. Here the "letter" (sound) representations are abstract and colorful forms that float in various sizes in the spread. The proper letter cues the page, so the "reader" can guess after decoding a few "characters" with the aid of a gatefold reference, and guess again. Many of the animals are expected, but there are some surprises — like ibis or newt. If your memory from childhood is good, you may even re-experience the mystery of your first encounter with letterforms!

Experience Design, a manifesto for the creation of experiences

Nathan Shedroff

Indianapolis, Indiana: New Riders, 2001
304 pages, illustrated, full color, softbound,
\$45.00, ISBN 0-7357-1078-3

"Experience" design is the new buzzword in design and this book is the first attempt to take its measure and define the concept. The book is smart and exuberant. It ties together the sensory and intellectual dimensions of experience design with a wide range of examples — from improvisational theater to the Vietnam Memorial — from interactive websites to movies such as the Eames' "Power of 10" and John Waters' "Polyester." The book itself exemplifies another experience of a book: text as needed with rich graphic development rather than text with puny visual accompaniments. The author presents a human-centered argument promoting people and everyday life over technology.

The book does have one serious defect and that is in the quality of the illustrations.

The general impression is of poor photocopies scanned at a relatively low resolution. The legacy of most of the great masters of typography is the marks they left on paper. To have those marks so degraded devalues the text.

Understandably most of the illustrations are reduced in size but often the reduction is extreme. Only occasionally are the original dimensions given. Some have their margins indicated by a box rule, but many do not and, comparing the reproductions with some originals in my possession, it is not certain that the margins indicated are accurate. This is particularly unfortunate when the original page has boxed rules as in the case of *The Diary of Lady Willoughby*, a seminal book in the Caslon revival. The impression is of a book with mean margins when they are in fact comfortably proportioned.

This is a small tragedy. A detailed and thorough study put together with such evident loving care and enthusiasm for the subject deserves better.

This book is a mine of typographic information. Every student of typography will be glad to have it, but they will need to go back to the originals to understand why some of us are so enthusiastic about the subject.

John Miles learned punchcutting in the Netherlands, guided by Van Krimpen, Radisch and Hartz. With Colin Banks, he continued type design — they were advisers to the type foundries of Stephenson Blake, Monotype Corporation and Joh. Enschedé en Zonen.

Interface Design & Document Design

Piet Westendorp, Carel Jansen, Rob Punselie,
editors

Amsterdam: Rodopi, 2000

120 pages, illustrated, one color, softbound,
\$17.00

ISBN 90-420-0510-6

This book presents seven essays by Europeans and North Americans who are various combinations of teachers, practitioners and researchers. Several of the articles explore the relationship between interface design and document design and the problems they present in relation to each other if they are constructed with different mental models. The structure of "help" query and response is another topic deserving attention, as is taking into account age-related impairments as the computer increasingly spans generations. These are thoughtful articles by highly qualified people.

The Theory and Criticism of Virtual Text, An Annotated Bibliography, 1988-1999

Lory Hawkes, Christina Murphy
and Joe Law

Westport, Connecticut: Greenwood Press,
2001

336 pages, hardbound, \$74.95

ISBN 0-313-31224-9

In a sea of publications full of hyperbole and restatement of the obvious or previously established, this book is a strategically located harbor, delivering a perspective on twelve years of intensive textual development that has made the internet the dominant mode of global communication. This is an annotated research guide covering virtual texts and the cultural contexts that shape them. The authors set their sites on "Reconceptualizing texts as 'virtual' — as nonlinear, two-dimensional, dynamic, and hypertextual — represents not only a major paradigm shift in the history of communication but a structural shift in the way that knowledge is generated, conveyed, shared, and evaluated."

The book covers 1525 annotated entries from a multidisciplinary perspective, organized in fifteen sections. The first sec-

NEW MEDIA

Alphabet to Email — How written english evolved and where it's heading.

NAOMI S. BARON

London: Routledge, 2000, 316 pages, \$18.95
ISBN 0-415-18685-4

Running through this book are questions regarding the cultural, monetary, scholastic and vernacular uses of the English language as it has continued to evolve over centuries. The author is a linguist with substantial interest in and knowledge of history and technology. She writes in an accessible manner appropriate to this hybrid book which is a cross between a trade and scholarly book (endnotes and a substantial bibliography).

The primary question this book addresses is what (if anything) we gain from the former separation between the differences between formal, written English and the more informal, colloquial spoken English. Her position is that the advent of email has blurred the edges of these two forms of usage.

"Since World War II, written English (at least in America) has increasingly come to reflect everyday speech. While writing on-line with computers has hastened this trend, computers didn't initiate it. As writing growingly mirrors informal speech, contemporary spoken and written English are losing their identity as distinct forms of language." (24)

The answer to the primary question — should the difference between speaking and writing be appreciated and maintained — has pedagogical implications. This is a time of turmoil and doubt in the teaching of English. Of what value is teaching the history of English? Should a prescriptive grammar be taught? Is punctuation based on speech patterns (breathing) or should it be a means to reveal the

structural characteristics of the sentence?

Is the focus on group composition detrimental to the development of individual competence and style? Does online composition and language processing mirror or change more traditional forms of writing and reading? Should one set of English conventions serve as a worldwide norm?

From the perspective of history, the reader is given insightful connections between historic change and its relation to various combinations of human interpretation and behavior and technological development. Historical information about copyright and ownership and its relationship to censorship speak to our current confusions in this regard. The notion of authorship and originality as it developed in the past speaks to our current use of appropriation and even the theoretical arguments about the interrelatedness of all text. What was and currently is an authoritative text? Even dictionaries have changed from arbiters of usage to that of descriptive record of use. Attempted reforms of spelling and handwriting accompany elocution and the differing attitudes among British and American speakers regarding what is correct and marks class. As English is evolving into a world language, the preservation or extinction of local ideosyncracies (British-American-Canadian-Australian-ESL) provide either fodder for arguments regarding standardization or elaboration. Conditions facilitating the rise of literacy offer contrast as some decay its demise.

From the perspective of technology, the reader is offered not only technical development and deployment, but the effect technology has on social and private behaviors. The radio, typewriter, telegraph, telephone and computer all figure prominently in this discussion. An example of the kind of information one might find follows, referencing the possibility of installing a house telegraph:

"A similar vision did, in fact, materialize two decades later. In 1877, the Social Telegraph Association — the ancestor of computer listers — was created in Bridgeport, Connecticut. The Association installed instruments in subscribers' homes that could be connected, through a central switchboard, to one another so that subscribers could 'speak' to one another through Morse Code once they had been taught how." (219)

The telegraph did alter language use as a kind of "cablese," a short, highly abbreviated message cut transmission costs for the sender. A literary style, the bare-bones writing of Ernest Hemingway, may also be more than the product of a modern sensibility. In his experience as a journalist during the Spanish Civil War, he confronted the technical limitations of cable transfer — this may have played a role in the development of his style.

With regard to another technology, the telephone, there is the "telephone presence" (similar to some radio voices) that is self-consciously mellow and articulate, marked by a cool precision and impersonality. These are personas that

tion is a history that covers the key players (Alan Turing, Vannevar Bush, Ted Nelson, Andries van Dam, etc.), while sections two through six explore knowledge creation and dissemination and views of human agency and social construction, including visualization studies, information design, discourse studies and textual analysis. Sections seven and eight deal with computer-mediated communication and education, while section nine looks at research, service and scholarly projects that apply virtual texts. Section ten looks at professional concerns regarding virtual communication in a variety of disciplines. Sections eleven through thirteen examine virtual texts in cultural contexts, while section fourteen examines legal and political issues. The final section examines the future and the impact of virtual texts from many perspectives.

The annotations are often brief, a sentence or two, but they point out the significance of the book, article or website. This is by no means a complete set of references, the authors exercised judgment. I would have liked to know about their process. Selecting a sample from among the wealth of resources published is no easy task.

If your interests include virtual text and its development, this resource is essential. Go at this book with your highlighter and check on what you may have missed!

Web Teaching Guide, A practical approach to creating course web sites

Sarah Horton

New Haven: Yale University Press, 2000

242 pages, illustrated, one color, softbound, \$15.95

ISBN 0-300-08727-6

This is the author's second book on web applications for Yale University Press. In the first book, Horton co-authored *Web Style Guide: Basic Design Principles for Creating Web Sites*. Increasingly faculty are using the web to supplement course materials through increased interaction, collaboration and updates. The book covers: planning, developing content, creating the

people put on for certain occasions out of concern for style or privacy and that clearly bleed over into computer chat rooms.

A subtle thread running through the book is the control of social distance made possible through technology mediated communications. I have surprised people, calling late or early at my office, when they expect to leave voicemail, but instead connect to the real me and are not prepared for a live conversation. Another subtle thread is the mania attached to various technically mediated communications, such as cell-phones, email, express packages and facsimiles. The social pressure is to conform to these mediations which means one is nearly always available and presumed to be motivated to respond quickly to any message.

Reading /writing behaviors are complementary and they run both together and separately throughout the book. For example, much writing consisted of compilations and commentary on the works of others in the Middle Ages. The author likens this approach to writing as an extended chain letter, after all the physical products were hand copied and unique. Some argue that the advent of printing with the beginning of standardized copies changed the earlier approach to writing. Baron takes issue with this citing research indicating that "There are no two identical copies of the first folio edition of Shakespeare's works (of which probably a thousand

'copies' were printed in 1623. And it's been estimated that 24,000 variations of the King James Bible came into being between 1611 and 1830." (57)

Regarding silent reading "To read quickly, you need to read silently. Modern competent readers can visually process a text more quickly than they can speak or listen to the same number of words (one reason many people prefer receiving email messages rather than voice mail). Quickly digesting large amounts of text contributes to serious scholarship and developments of broadly-based individual knowledge." (178)

Baron observes that writing is increasingly related to informal speech. Email is visually organized for rapid scanning, punctuation marks speech cadences. Punctuation has a schizophrenic history in relation to speech patterns and the revelation of grammatical structure. She considers that in the future punctuation checkers may join spelling and grammar checkers as orthodox writing aids. The only somewhat technical section of the book is a discussion of email characteristics in terms of the languages in contact. Here the author explores email in terms of the conventions of pidgin and creole.

The conclusion of the book reminds us that language, its style and meaning is dynamic. The author asks: what is a text? And answers that in the earliest times there was no requirement that a text have anything new to say; for a time the value

of a text was that it present something new; now texts are fluid documents and part of a gift economy.

It is the gift economy of onlines communities, shifts in understanding what is intellectual property, relaxation of constraints regarding appropriation and attribution, even the effectiveness of open source code development that alter some fundamental ideas regarding text and communication as property.

The author concludes that email is part speech and part writing and that it is changing how we compose and consider communications in English.

Reviewed by Sharon Poggenpohl native speaker and writer of American English and editor of this journal.

website, using the website and assessing it. With a practical focus and case study examples, this is a step-by-step approach.

Website Graphics Now —

The Best of Global Site Design

Noel Douglas, Geert J. Strengholt and Willem Velthoven, editors

London: Thames & Hudson, 1999

160 pages, illustrated, full color, large format, softbound, \$34.95

ISBN 0-500-28119-X

Four brief but interesting essays begin this book. They are followed by twenty-six websites in six categories selected by an international panel of designers and journalists. The categories are: Art and Design Experiments, Educational Sites, Promotional Sites, Transaction-based Sites, E-publishing Sites and Community-based Sites. Each entry is presented with a description of the pros and cons of the site accompanied by three large format pages of images from the site. One of the sites, *nationalgeographic.com* is applauded for its consistent conventions for navigation and graphic feel. The panel, however, criticizes the site for having carefully designed the "least interesting and important [features] from an ecological or political perspective." With its critical commentary, this is a provocative resource.

Walter K. Lew, a Yi Sang scholar, has drawn attention to the need to correct two of Yi Sang's poems as they appeared in *Visible Language* 33.3.

A correction to Yi Sang's "Poem No. II," as it originally appeared in *Visible Language* 33.3, page 216, is based on the following reference. Lew, Walter, K. 1995. "Selected Poems of Yi Sang." Translated by Walter K. Lew. *Muae I*. New York: Kaya Production, 80.

when my father dozes off beside me i become
my father and also i become my father's father
and even so while my father like my father is
just my father why do i repeatedly my father's
father's father's...when i become a father why
must i lopingly leap over my father and why am
i that which while finally playing all at once my
and my father's and my father's father's and my
father's father's father's roles must live?

Yi Sang
Poem No. II
Translated by Walter K. Lew

A correction to Yi Sang's "Poem No. IV," as it originally appeared in *Visible Language* 33.3, page 220, as submitted by Walter K. Lew.

A Problem Concerning the patient's condition

1 1 1 1 1 1 1 1 1 1 .
 2 2 2 2 2 2 2 2 2 2 . 1
 3 3 3 3 3 3 3 3 3 3 . 2 2
 4 4 4 4 4 4 4 4 . 3 3 3 3
 5 5 5 5 5 5 . 4 4 4 4
 6 6 6 6 . 5 5 5 5
 7 7 7 7 . 6 6 6 6
 8 8 8 . 7 7 7 7
 9 9 . 8 8 8 8
 0 . 9 9 9 9
 . 0 0 0 0 0 0 0 0 0 0

Diagnosis 0:1
 10.26.1931
 As above Physician-in-Charge Yi Sang

Yi Sang
 Crow's-Eye View: Poem No. IV
 Translated by Walter K. Lew

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Forthcoming Issues

Several special issues are planned for 2002.

DESIGN RESEARCH BIBLIOGRAPHIES

Design does not have a well developed literature. This special issue is a collaborative attempt to identify books important to design and design research in particular. Three groups of annotated books will be featured:

- 1) those that support thinking about a philosophy of design;
- 2) those that present useful design research principles and methods; and
- 3) those that investigate the relationship between theory and practice.

CULTURAL DIMENSIONS OF VISUAL COMMUNICATION

As globalism intensifies, an examination of cultural dimensions of visual communication becomes more important. Historical, contemporary and cross-cultural comparisons; future trends in global communication; political issues of language use in bi-lingual or multi-lingual cultures; and other related topics will be found in this issue.

SEARCH AND RESEARCH IN COMMUNICATION DESIGN

Research is marked by analysis from documented evidence. Whether this evidence is gathered and analyzed through a quantitative, qualitative or comparative method depends on the nature of the research question. A variety of research questions and methodological approaches will appear in this issue which expects to support the new challenges communication design faces. As the journal's mission states: "The shift from page to screen is comparable in its significance to the shift from manuscript to print. Developing the knowledge base and conventions for this new media will take time and challenge our ability to move beyond the book and into more fluid, relational and responsive systems of presentation." Since design happens in a situation of complexity and uncertainty (to paraphrase Donald Schön from *The Reflective Practitioner*), the current situation of change complicates the process of building an understanding of what variables in the communication process can be adequately accounted for and controlled.

Call for Papers:

Visible Language

Cultural Dimensions of Visual Communications

Visible Language invites abstracts for review for possible inclusion in a special issue focusing on the Cultural Dimensions of Visual Communication scheduled for January 2003.

Possible approaches to this issue include: historical, contemporary, and cross-cultural comparisons; future trends in global communication; political issues of language use in bi-lingual or multi-lingual cultures.

Topic Examples

The following examples are not exhaustive, but suggestive of the kinds of papers the editor might expect.

- * Software interface, reading and use conventions among non-western languages
- * Authoritative communication - who speaks to whom with what typographic conventions
- * Developing a "visual voice" for oral languages (those without a written form)
- * Bilingual and multilingual conventions in visual communication
- * Is English becoming the defacto world language? (pros and cons)
- * Visual communication (no words allowed) - how effective is it cross-culturally?
- * Cultural comparisons of contemporary communications by genre (government forms, death notices, sales, etc.)
- * Semiotic analyses of common communication objects: stamps, money, business cards, shop signs, maps, etc.

Abstracts should contain

Title, Author, Affiliation, Country and a 500 word description of the forthcoming paper. The final paper is expected to be around 5,000 words. Visual examples are very welcome.

Send the abstract via email to

poggenpohl@id.iit.edu

or send via ordinary mail to

Visible Language
Institute of Design, IIT
350 North La Salle Street
Chicago, IL 60610
USA

Time-line

| | |
|--|---------------------------|
| <i>Cultural Dimensions of Visual Communication</i> | |
| February 15, 2002 | Submission of abstract |
| March 1, 2002 | Notification of selection |
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