Information Interaction Design: A Unified Field Theory of Design

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The most important skill for almost everyone in the next decade and beyond will be the ability to create valuable, compelling, and empowering information and experiences for others. To do this, we must learn established ways of organizing and presenting data and information as well as develop new ones. Whether we do this through traditional print products, electronic means, interactive experiences, or live performances makes little difference. Neither does it matter whether we are employing physical or electronic devices or our own bodies and voices. The process of creating anything is roughly the same. The methods of solving problems, responding to audiences, and communicating to others in any medium are enough alike for us to consider them identical for the purposes of this paper. The same issues apply across media and experiences, because they directly address the phenomena of information overload, information anxiety, media literacy, media immersion, and technological overload—important problems that need better solutions.

The intersection of these issues can be addressed by the process of information interaction design that is described in this paper. In other circles it is called information design, information architecture, or interaction design. Some call it instructional design, and yet others, simply common sense. We all constantly create or engineer interactions, presentations, and experiences for others. Information interaction design addresses the pervasive need


to do so with one process for producing every book, directory, catalog, newspaper, or television program. We can also use it to create every CD-ROM, kiosk, oral presentation, game, and on-line service, as well as every dance, music, comedy, or theater performance. The traditions and technologies change with every venue, but the process does not—or should not.

Information interaction design is the intersection of three different disciplines: information design, interaction design, and sensorial design (see figure 11.1). Information design’s principles originate in the publishing and graphic design worlds, although few professionals in these fields intentionally practice them. The discipline addresses the organization and presentation of data—its transformation into valuable, meaningful information. Although it is something that everyone has always done to some extent, mostly unconsciously, only recently has information design been identified as a discipline in itself, with proven processes that can be employed and taught. Unfortunately, there are precious few sources for learning about the practice of either information design or interaction design.
Interaction design (in essence, story creating and storytelling) is at once both an ancient art and a new technology. Media have always affected the telling of stories and the creation of experiences, but currently new media offer capabilities and opportunities not previously addressed in the history of interaction and performance. The demands of interactivity in particular are often misunderstood by all but the most experienced storytellers and performers. We do not yet understand precisely how these skills are expressed through interactive technologies, what interests audiences will have in them, and what demands audiences will make of these technologies. Consequently, there are few sources of information about these issues and the techniques we can use to meet them. The practitioners of this new territory are desperate for some new ideas and cogent explanations. Interaction design is also the most critical component to the success of interactive products.

Sensory design is simply the employment of all the techniques we use to communicate to others through the senses. Most of the time we think first (right after writing) of employing the visual design disciplines, such as graphic design, videography, cinematography, typography, illustration, and photography. But the disciplines that communicate through other senses are just as important; sound design and engineering, musical performance, and vocal communication are also effective in the appropriate circumstances. In fact, sometimes they are the most creative media to employ. Tactile, olfactory, and kinesthetic senses, although rarely used (often due to technological or market constraints), are just as valid and can add enriching detail to an experience.

The professional disciplines of these sensory media are worlds unto themselves, with their own histories, traditions, and concerns. To learn each one well would take more time and skill than could be expected of any individual. Therefore it is important for everyone (including the general public) to gain at least an overview of the important issues and techniques of each discipline, so that they can be employed correctly in presenting ideas and communicating messages—especially within a team. Experienced experts in each of these areas, therefore, should participate in
deciding how to employ the various media in support of a project's information and interaction goals and messages.

These levels of understanding are significant because they define the boundaries within which we can create and communicate. While information design is most heavily involved in the representation of data and its presentation, interaction design is most relevant to the creation of compelling experiences. When designing projects, I usually find it easier to start with the information design process if a lot of data already exists; if not, I begin with the interaction design. The following sections describe processes I have found useful for both approaches.

**Information Design**

While few designers have been explicitly concerned with the issues paramount to clear communication—organization, presentation, goals and messages, clarity, and complexity to name a few—these functions have been addressed, at least on a subconscious level, by everyone who attempts to organize his or her thoughts and communicate them. Information design doesn't banish aesthetic concerns, but it doesn't focus on them either. Most important to communication are the issues listed above. However, there is no reason why elegantly structured or well-architected data can't also be beautiful. Information design isn't meant to replace graphic design and other visual disciplines but to provide the framework for expressing these capabilities.

Our understanding of understanding must begin with the view that what most of us deal with everyday—the vast numbers of things that bombard our senses—is not information. It is merely data. Richard Saul Wurman expresses this well. Data, he points out, is fairly worthless to most of us. It is the product of research or creation (e.g., writing), but it is not an adequate product for communicating. To have value, it must be organized, transformed, and presented in a way that gives it meaning—and makes it valuable (see figure 11.2).
Information is also not the end of the continuum of understanding. Just as data can be transformed into meaningful information, so information can be transformed into knowledge and then, further, into wisdom. Knowledge is a phenomenon we can build for others, just as we can build information for others from data. This is done through interaction design and the creation of experiences, a process we will discuss further in the next section. But at this point, just think for a moment how hard it is to build a meaningful experience for someone else. It is first necessary to understand who that person is; what his or her needs, abilities, interests, and expectations are; and how to reach them. Brenda Laurel often states that the interactive medium "is not about information, it is about experience." She is absolutely correct, but I would add that in creating these experiences for others (and even for ourselves to some degree), we
must understand and structure the information (and data) we use to build them.

The Continuum of Understanding

A Bit About Data Data is the product of research, creation, collection, and discovery. It is the raw material we find or create that we use to build our communications. Most of what we experience, unfortunately, is merely data. It is fairly easy to distinguish: it is often boring, incomplete, or inconsequential. It isn't valuable as communication, because it isn't a complete message. Most of the technology we call information technology is, in fact, only data technology, because it does not address understanding or the forming or communication of information. Most of this technology is simply concerned with storage, processing, and transmission.

Data is useful to producers, or to anyone playing a production role. Everyone does this to some extent, whether professionally or personally—in print, electronic, or spoken forms. But data are not meant for consumers. Yet too often we deluge our audiences with data instead of information, leaving them to sort out and make sense of them. Many providers even brag of the amount of meaningless, contextless data they throw at their customers. CNN, for example, actually calls its bits of data “factoids” and slides them in between other, meaningful presentations.

Successful communications do not present data. If presenters don’t bother to provide context and build meaning, audiences will have little patience for doing it themselves. As designers, we must ask ourselves constantly what service we provide.

More About Information Information is the first level at which it is appropriate to communicate with audiences. It represents the transmission of thoughtful messages that reveal the relationships and patterns (the context) among the data presented. Transforming data into information is accomplished by organizing them into a meaningful form, presenting
them in appropriate ways, and communicating the context around them.
I describe these processes in more detail in the following sections.

The Experience of Knowledge  Knowledge is the pay-off of any experience.
It is the understanding gained through experience, whether bad or good.
Knowledge is communicated by building compelling interactions with
others, or with systems, so that the patterns and meanings of the informa-
tion can be assimilated. There are many types of knowledge: some is
personal, having a meaning unique to one person’s experiences, thoughts,
or point of view; local knowledge is that shared by a relatively few people
through their common experiences; while global knowledge (at the other
end of the spectrum) is more general. Global knowledge is more process-
based and, necessarily, more limited, because it relies on such high levels
of shared understandings and agreements about communication. Effective
communication, which must take into account the audience’s knowledge
base, is more difficult with larger audiences, whose pool of shared knowl-
edge is less detailed and more generalized.

Knowledge is gained through a process of integration, in both the pre-
sentation and the mind of the audience. Information forms the stimulus
of an experience, while wisdom is the deeper understanding of the mes-
sage that can be gained through the experience. Knowledge, therefore (as
figure 11.3 illustrates), is fundamentally participatory; it is the level all our
communications should target, for it is the one that allows us to convey
the most valuable messages. It is also the highest level that we, as design-
ers, can affect directly, since it is still in the local or global range. Past this
point, understanding is primarily the responsibility of audience members
as their personal experiences are more deeply tapped.

What Is Wisdom? Wisdom is the most vague and intimate form of
understanding. It is much more abstract and philosophical than the other
levels, and we know less about how to create or affect it. Wisdom is a kind
of metaknowledge, a blending of all the processes and relationships
understood through experience. It is the result of contemplation, evalua-
Figure 11.3
Understanding Context. Context becomes more personal as understanding becomes more complex. In addition, participation on the audiences’ part becomes important and then mandatory along the same progression.

tion, retrospection, and interpretation—all of which are particularly personal processes. We cannot create wisdom as we can data and information, and we cannot share it with others as we can knowledge. We can only create experiences and describe processes that offer our audiences opportunities to find wisdom. Ultimately, wisdom is an understanding that must be gained by the individual.

Organizing Things
The first step in transforming data into information is to play with its organization. This is one of those simple, yet crucial processes that seems worthless until through it we discover something we have never seen before. We need to realize that the organization of things affects the way we interpret and understand the separate pieces. Take any set of findings: about students in a classroom, a company’s financial data, a city’s demo-
graphics, or the kind and numbers of animals in a zoo. How would you organize them? Which arrangement is best?

Richard Saul Wurman suggests five ways to organize everything, but seven seems clearer to me. Everything (and I mean everything) can be organized in one of these ways: according to the alphabet, location, time, continuum, number, or category. A last way of organizing things can often be randomness—in other words, no organization. (If you can think of another way, let me know.)

The point of this understanding is that there are usually better ways to organize data than the traditional ones that first come to mind. Each organization of the same set of data expresses different attributes and messages of the set. It is important to experiment, reflect, and choose which organization best communicates our messages. We also need to keep in mind that while these seven ways of organizing things make it easy to brainstorm new presentations, it is up to us to choose the one that is most appropriate to our audience (i.e., the method of organization that highlights the most important aspects of a presentation).

**Alphabets** Just about any book has an alphabetical index because, while we may know exactly what we are looking for, we often do not know where it is. Although the alphabet is an arbitrary sequence of symbols, indexes work because we were taught the sequence early and have had it reinforced throughout our lives. It is not universally useful, as you will find if you ever try to use a telephone directory in a language that uses an unfamiliar alphabet. While most indexes are organized alphabetically, very few products are (mostly dictionaries and encyclopedias). This is because few data have any great meaning based on the first letter of their respective labels. In actuality, of course, the alphabet is a continuum (from A to Z), but it is a special one for the reasons stated above.

**Locations** Locations are natural ways of organizing data whose importance lies in their relations or connection to other data. How easy would it be to find the exits to an airplane if they were listed and described in text
with no diagram? Although many projects can benefit from locational organizations, they are seldom used, simply because their designers never experimented with the idea. Producing maps and diagrams is not as easy as simply writing text, but if you have ever used an atlas or an *Access* travel guide, you know how much better a sense of a place you get when things are oriented by their geographical relationships. Consider, for example, a subway map that simply lists all station stops in sequence, compared to one that arranges them in a layout resembling the city they serve. This may sound obvious (and it should be), but then why do car manuals not organize parts by their location on the car or medical books arrange ailments according to their location in the body—the one sure thing we know when we aren’t feeling well?

**Time** Organizing things according to time or sequence may sound obvious for bus and train schedules or for historic timelines, but it can be just as effective for cooking, driving, or building instructions. Time need not be addressed solely in terms of minutes and hours but can also be organized in days, months, years, centuries, processes, or milestones.

**Continuums** Any qualitative comparison can be describe with a continuum. All ratings systems, whether numbers of stars or numbers of RBIs (runs batted in), imply a value scale. Arranging items in a continuum indicates that this value scale is the most important aspect of the data. Like other organizations of data, a continuum used as the primary organization expresses a particular message and order of importance.

**Numbers** I categorize number systems as a separate way of arranging things even though numbers, like alphabets, are an arbitrary continuum (usually in base 10, as our species has ten fingers). But unlike alphabets, base-10 numbers are much more universal, because they can be combined in different forms according to their mathematical relationships. It is common, but not necessary, for numerical organizations to be continuums. For example, the Dewey Decimal System used for organizing books in
many libraries is a number system that does not represent any magnitude or attribute of the books but simply assigns numbers to categories and subcategories.

**Categories** Categories are a common organization, and a reliable one, as they allow similar things to be grouped together according to some important attribute. The specific categories, however, are crucial, as they communicate more easily than other organizations the designer's prejudices and understandings. Like all organizations, categories affect the audience's perception of the information.

**Randomness** While random or arbitrary organizations might not seem a useful way to organize things and "add value" to them, they are sometimes the best way if a challenge of some kind is involved. Think about a game in which all the pieces are already arranged or in which the sequence of moves is predetermined and carefully and logically laid out. It wouldn't be very much fun to play. There may be other times when random organizations present a better experience than an orderly one, and it is up to us to explore those possibilities and employ good judgment.

**Advanced Organizations**
In case these descriptions seem too dry and utilitarian, let me describe an example in which the organization of data can provide an intense emotional reaction. If you are familiar with the Vietnam War Memorial in Washington, D.C., you may know how quietly moving this monument is (figure 11.4). But you may not realize the importance of its organization. The names of all of the U.S. military personnel who died in Vietnam are inscribed on the surfaces of two long, black, granite walls. The walls at the beginning of the monument are short (around twelve inches tall) but they increase in height to more than nine feet at the center where they meet. They are constructed this way for a special reason. The names of the men and women are arranged according to the time of their death, beginning with the first who died during the "police action," mounting as the death
toll rose at the height of the war, and trickling down as the United States pulled out of the country. The names thus chart the pattern of the United States’s involvement and the personal stories of the people involved and most affected by it. Imagine how different the monument would be without this organization. Suppose the names were listed alphabetically (which was actually proposed when the design was accepted). While it might be easier to find a particular person, the search (like the names themselves) would be reduced to a mechanical process, a granite White Pages. Lost would be the individuality of each name and life. And in a list of seventeen John Smiths, which one is yours?

An alphabetical organization would have completely depersonalized the monument and diminished its emotional power. So would most other organizations. Imagine an organization by categories: pilots listed here, infantry listed there. How about a continuum based on rank or, for that matter, height: the tallest men and women at one end, the shortest at another?

What is key to this emotional experience is that those who died are found among those with whom they died. Without this organization, in
fact, there is no longer any meaning to the wall's gradual growth and dwindling height. Any other organization would have created a different memorial entirely, one, most likely, without the power and emotion created by the one built. Yet all of this is somewhat subliminal. When you visit the monument, you aren't much aware of the mechanics of its structure, but it works nonetheless. And this is true of any project, whether it is a sensitive and emotional monument, a powerful, inspiring museum, a useful and concise catalog, or a thrilling and interesting performance.

**Multiple Organizations**

Almost all organizations are really nested, multiple organizations. Most directories, for example, list people's names by division or location, then by department or title, and then by alphabet. Catalogs may break products into categories first, then arrange them in a continuum based on price (highest cost to lowest perhaps). Be aware that the primary organization is just that and that large groups of things may need secondary or even tertiary suborganizations. Each of these subcategories, of course, needs to be clear and meaningful as well.

It is also useful to include indexes that organize the same items in different ways. This allows people to find things in the ways they are accustomed to or in the ways they learn best. All people learn differently and have varying skills. Some may be comfortable with maps, while others prefer lists. Some may not understand the alphabet, while others can't relate to a continuum. Multiple organizations help everyone find things more easily. In addition, even if people understand the organization, they may not have the correct information. For example, they may know the street they need to go to, but not where to find it on a map (this is where street indexes come in handy). They may know that they want a recipe for a low-calorie dessert but don't want to search through every recipe in the dessert section to find one.

Lastly, it is precisely the ability to see the same set of things in different organizations that allows people to uncover the patterns of relationship
among them. If possible, a design should let people rearrange things themselves or provide them with alternative organizations so that they can discover the patterns for themselves.

**Metaphors**

Much has been made of the ability of metaphors to help people understand things quickly. While a metaphor can be generally helpful, it is a false crutch to cling to. Metaphors (which are usually similes) are not required; nor are they always the best approach. Too many interactive projects, for example, start with the question “What metaphor should the interface use?” Most often, the interface shouldn’t use any metaphor at all—at least not as the word is narrowly defined.

Metaphors are simply one way of establishing context (i.e., transforming data into information). It is important that the context implied be the one intended and that it match the desired understandings. Too often, metaphors establish the wrong context and help create inaccurate expectations that cannot be met.

Metaphors are especially useful when they fit well into a user’s or reader’s experience. But to be used well, they must be abandoned when they begin to fail, or when they are asked to do more than they are capable of. A good example is the desktop metaphor used by many personal computers. The strength of this idea was that it used common objects to indicate relationships by analogy (a trash can for discarding files, files for individual projects, folders for keeping groups of files together, etc.). Fortunately, the designers ignored the metaphor when it broke down (for example, in inventing dialog boxes) and didn’t try to take it further than was convenient.

Recently, a colleague of mine suggested that metaphors could be another way of organizing data. She may be correct, and more thought should be devoted to this question. But I generally feel that metaphors are more about representation than about organization or presentation. They seem to me to relate more to the cognitive orientation (i.e., the meaning) than to the structure of a presentation.
Goals and Messages
All effective communication involves defining the goals of the experience being created and the messages to be conveyed as early as possible in the development process. These two objectives drive all decisions—from information design, through interaction design, and including all aspects of sensorial design. Every decision, no matter how simple or mundane, should support the goals and messages. This is a way of ensuring that inappropriate data, techniques, technology, or styles will not be used. At every decision point, the choice should be the solution that best meets the goals and messages decided on at the beginning of the project. While this sounds obvious, too often the ideas that drive the presentation are at odds with the messages presented.

Very often the goals and messages stipulated by a client will not be correct. The client is often too close to the problem to see the solution clearly. To be successful, we need to uncover one or two layers of fundamental goals that underlie the stated goals and agree to present these. Otherwise, we may find ourselves unable to satisfy the client or communicate the correct messages to our audience.

Clarity
The most important goal of effective communication is clarity. Clarity is not, however, the same as simplicity. Often a simple organization is clear if the intended message is brief and limited in scope; but if the message is about a complex relationship, it may necessitate presenting a large amount of data. This complexity can be made clear through effective organization and presentation and need not be reduced to meaningless “bite-sized” chunks of data, as simplifying it usually does. Clarity is best accomplished by focusing on one particular message or goal at a time and not attempting to accomplish too much all at once. Simplicity, on the other hand, is often responsible for the “dumbing down” of information rather than the illumination of it.
Think for a moment about what experiences are. How do you create them? How do you know when they are successful? What are the most satisfying experiences you can remember? Unfortunately, few people are ever taught how to create wonderful experiences for others. I believe that one of the nicest experiences you can have is to enjoy a stimulating conversation with another person over a great meal. I would rather do that than watch television, read a book, or use any interactive product I have ever seen. But how do you set up and maintain such an experience? We are taught history, science, mathematics, languages, and many valuable processes but hardly anything about having a great conversation, though this can be one of the most satisfying things in life. Why?

While some people seem to have natural abilities for creating wonderful experiences for others (think of the “life of the party,” that great instructor, your friends, etc.), most of us must learn the hard way, through trial and error. Wouldn’t it be great if we could be explicitly taught how to create meaningful interactions for each other? This is what interaction design addresses. Unfortunately, it is still a new field and has few texts, fewer classes, and almost no curriculum—even less of these than information design. The best sources for learning the skills critical to the success of any interactive project or presentation are the performing arts. Indeed, the most successful people now practicing interaction design in new media seem to have a background in some type of performance: dance, theater, singing, storytelling, or improvisation.

Because of the history of interaction in the performing arts, the fields of scriptwriting, storytelling, performance, and instructional design provide some of the only sources of guidance. Each of these disciplines attempts to communicate varied stories and messages through the creation of interesting and wonderful experiences. As we look to these disciplines for knowledge about interactivity, we must also keep in mind the limitations of the technologies and media through which our messages are transmitted.
Figure 11.5
Interaction Spectra. There are several aspects to experiences that audiences tend to feel make an experience more "interactive." Some of the most important are these six.

Continuums of Interactivity
One way to consider the meaning of interactivity is to envision all experiences (and products) as inhabiting a continuum of interactivity. On one side are such passive experiences as reading or watching television. While some have held that even these activities involve an interaction between the mind and the device, or the imagination and the story, this argument seems weak and overly philosophical to me. By comparison with experiences like painting, conversing, or producing a television program, these activities offer the audience no choice, control, or incitements to productivity or creativity. The difference that defines interactivity, then, can include the amount of control the audience has over the tools, pacing, or content; the amount of choice this control offers; and the audience's ability to use the tool or content to be productive or creative.

All products and experiences can, therefore, by placed along a continuum (as shown in figure 11.5). It is important to note that there is no
good or bad side of this continuum. The only value judgment should be whether the level of interactivity (place on the continuum) is appropriate to the goals of the experience or the messages to be communicated.

Interactivity is different from production values or richness of content. Television programs and films can have incredibly rich stories, technical qualities, and narrative presentations but offer almost no opportunities for interaction (except changing the channel or leaving the theater). Compare this situation with the experience of improvisational comedy, in which the audience is involved by offering suggestions or actually joining the action as the story is created.

Control and Feedback The first two spectrums of interactivity involve how much control the audience has over the outcome (i.e., the rate, sequence, or type of action), and how much feedback the interface supports. Typically, experiences with high interactivity offer high levels of feedback and at least some control. Examples of these kinds of experiences are games in which the play depends directly on the player’s involvement and choices—unlike television, in which the experience plays out whether anyone is there or not.

Productivity and Creative Experiences Productivity is another spectrum that can coincide with other interactivity spectrums. Creative experiences allow a user/creator/participant to make, or share in making, something. Some experiences can be used more productively than others (as opposed to being merely entertaining), and productivity is traditionally more valued in business products than in entertainment devices. Nonetheless, most people find creating and producing something interesting, entertaining, and fulfilling—even in leisure activities. Tools of creation are therefore extremely important components of the meaningful, compelling, and useful experience. Creative products require users to participate in shaping the experience or manipulating components instead of merely watching and consuming what the product brings forth.
Technologies that are *co-creative* (a term coined by Abbe Don) offer the user or audience assistance in the creation process. People are naturally creative and are almost always more interested in experiences that allow them to create instead of merely participate. While many situations can create anxiety in people not accustomed to performing with the tools or techniques provided, this anxiety can be lessened through careful design or by offering assistance that helps people express their creativity. This could take the form of recommendations, guidelines, advice, or actually performing certain operations for users.

Another attribute of interactive creative experiences is the ability to add new content or tools to the initial set so that a product, toolset, or database becomes a “living,” evolving project. As yet, few products are designed to grow or become more valuable over time with the active participation of the audience. Future products that help users structure their experiences and share their knowledge are certain to become more valuable than those that do not.

*Adaptive Experiences* Adaptive technologies are those in which the behavior of the user/reader/consumer/actor changes the experience. These changes can result from agents, modifying behaviors, and pseudo-intelligences. *Agents* are processes that can be set to run autonomously, performing specific, unsupervised (or lightly supervised) activities and reporting back when finished. *Modifying behaviors* change the tools and/or the content in different ways, depending on the actions and techniques of the user. Some games, for example, do this by becoming more difficult as the player becomes more proficient. Others may modify the content to reflect a user’s point of view, level of proficiency, or desire for varying amounts of detail. Both agents and modifying behaviors, as well as other techniques, can make a device or character in an interactive presentation (e.g., game) appear to be intelligent (*pseudo-intelligence*). Of course, this appearance of intelligence alludes to a much larger question about intelligence, life, and how these are defined. Suffice it to say that making certain kinds of choices to change behavior based on the actions of others
(whether random, instinctive, or algorithmic) can create the appearance of a sophisticated system or process and imply a kind of independent intelligence.

**Communicative Experiences** Like other productive and creative experiences, opportunities to meet others, talk with them, and share their personal stories and opinions are always viewed as valuable and interesting. Because these experiences involve two or more people, they also inherently involve high levels of control, feedback, and adaptivity. The telephone is a great example of such a communicative device. So are chat lines, discussion bulletin boards, and cocktail parties. Some of these are so valuable and enjoyable for some people that they become virtually indispensable to their lives.

**The Experience Cube**

Each of the six attributes described above can be plotted on a diagram (figure 11.6) in order to visualize how typical interfaces and products are related to each other by these attributes. Unfortunately, it is difficult to create a clear six-dimensional diagram; however, we can produce a close approximation by combining the feedback and control attributes into one dimension (height), the creative, productive, and communicative attributes into another (width), and envisioning the adaptive attributes as a third, depth dimension. This gives us an experience cube that gives us some idea of the general relationships among the kind of experiences we can learn from.

One of the first lessons to note is that all life experiences (whether mediated by technology or not) fit into this cube. This is important, because it reminds us that the experiences we create in our designed products are viewed within a much wider context by our audiences. Unfortunately, most producers of interactive media or multimedia don't realize this fact. It must be remembered that a reader/user/consumer has access to many media and, most likely, is not as enamored of the technology of any particular medium as its developer might be. This means
that the competition for interactive media products is as big as all of human experience. In other words, your competitors for that CD-ROM on tropical fish are not only other tropical fish CD-ROMs, or even laser discs, but also television documentaries, narrative and reference books, aquariums, scuba diving, travel, and so forth. If the experience you create is not a compelling one (whether justified by the bounds of the technology or not), you will never find a large audience.

This is probably why we have seen only a few categories of successful interactive media products: children’s books and lessons, games, reference works, and pornography. Both games and reference works use interactive media appropriately and create experiences that cannot be duplicated easily in other media. While some children’s books and products do this too, even those that don’t have been successful, probably because the market (parents) can justify any expenditure—on both the products and the systems to run them on—that contributes to their children’s education.
Curiously enough, even though current pornography uses interactive technologies particularly poorly, the market thrives. There seems to be an overlap between sexual curiosity and technology.

So, we come back to the question: How do we as designers create meaningful experiences and interactions for others? As noted above, we must first revisit our goals and messages and re-evaluate the kinds of experiences we want our audience to have. We must also ask them what they need and want from these experiences. This inquiry is what market research is supposed to be about. It is not user testing (which needs to be done later once some possibilities have been developed), but it is nonetheless a crucial step. The process of development must involve brainstorming various alternatives for meeting these goals, messages, and audience interests and abilities (in whole or in part) until possible solutions emerge. We must then give shape to the solutions with the tools of sensorial design and test them before we approve them or label them successful.

Sensorial Design

Sensorial design is simply an all-encompassing category comprised of the many disciplines involved with the creation and presentation of media experiences (figure 11.7). These include writing (text); graphic design, iconography, map making, calligraphy, typography, illustration, and color theory (graphics); photography, animation, and cinematography (images); and sound design, singing, and music (sound). We should probably also include perfumery and cooking in this category, as these involve the purposeful stimulation of the senses—even if the senses of smell and taste are not very widely utilized as entertainment media. Each of these disciplines have deep traditions and detailed procedures. It is not pertinent to focus on them individually at this point; but while they are different in many ways, they all share some common attributes and concerns. The latter include the appropriate use of media, style, and technique; concern with media literacy and bandwidth application to a particular technology; and an understanding of the human senses.
Figure 11.7
Sensorial Media. All “presentation” media stimulate the senses in some way. While visual, auditory, and written media are the most common for computer interfaces, they are not the only important media available.

Media Differences
Each medium has different strengths and weaknesses. Each excels in different capabilities and different types of communication. These are intricately related to the way we perceive the world through our senses (figure 11.8). Think for a moment about our senses and how we as designers use sight, hearing, touch, taste, and smell. To do so more effectively, we need to develop a better understanding of our senses, how they operate, how they relate to each other, and how to create for them. Gaining this understanding will be but the first step toward learning to imagine more compelling experiences.

Style and Meaning
Using the media appropriately is not always easy. Many times, one person or group involved in a project demands that a particular component be
used when another would be better. The same is true of style, which conveys meaning, whether implied, accidental, or deliberate. Choosing the appropriate attributes and implementing them consistently is essential to development of a cohesive audience experience. On large projects, this cohesion can easily get lost as many people implement various parts according to their own standards and preferences. There are few details that do not affect the presentation, legibility, and understanding of a message. Even a detail like whether to set text flush left, flush right, centered, or justified on both margins changes the legibility and perception of the paragraph, and, therefore, affects the text itself. All sensorial details must be coordinated, not only with each other but also with the goals and messages of the project. The better integrated and careful the synthesis of these design processes is, the more compelling, engaging, and appropriate the experience will be and, consequently, the more successful the interactive communication will be.
Conclusion?

Designing an interface for any audience experience, whether technological, physical, or conceptual, begins with the creation of meaning and the development of an appropriate type of interactivity. These decisions influence further decisions about the type and style of sensorial media needed to present the experience to the audience in an appropriate and supportive way. Addressing one factor in the equation while ignoring the others can lead to an incomplete or unbalanced experience. In many cases, simply understanding the concepts of interactive information design can lead to development of better experiences. More often, it is necessary to address explicitly ways of integrating these concepts into the components of the final design.

This is really not a conclusion as much as it is a beginning. There is still much for all of us to learn and share about these issues. Both information design and interaction design are extremely new disciplines and will grow and improve as we experiment and create. The concepts formulated so far, however, represent the beginning of a better understanding of communication and will serve us well over the next phase of our development.

Notes

1. Richard Saul Wurman is one of the most renowned information architects. His Information Anxiety (1989) is one of the few instructional sources available on information design. His issue of Design Quarterly, Hats (1989) also provides a condensed version of his most important understandings.

2. Brenda Laurel, one of the ablest interface designers in the industry, is a major proponent of the design of experiences. Her edited anthology, The Art of Human-Computer Interface Design (1990) is a great place to start, and her Computers as Theatre (1991) is a good place to continue.

3. Abbe Don, another talented interface designer, specializes in interfaces for personal narratives. Her address is Abbe Don Interactive, 618 Sanchez, San Francisco, CA 94114.

References


