

Cleotilde Gonzalez

While waiting for the Visual Interaction Design (VID) meeting in CHI '94, I looked at the screen at the title: 'Visual Interaction Design', and wondered, 'Why do we use the word *interaction* and not *interface* or *dialogue*?' The word *interface* is almost universally used, and everybody knows what an interface is. *Dialogue* may also be a good word, and it commonly replaces the word *interface* in several publications. *Interaction* seemed intuitively a good word to describe what visual designers do, but what is the difference between *interaction*, *interface*, and *dialogue*? I thought about these concepts during Loretta Staples' presenta-

tion of a system, determines where the system ends and where the environment starts, and it is the medium to communicate from the environment to the system and from the system to the environment. As visual designers we should ask ourselves: do we design the medium to communicate or the actual communication process?

The word *dialogue* is common in human communication. A dictionary definition says that *dialogue* is the conversation between two or more persons. Within the context of human-computer interaction, the word *dialogue* has been commonly used to describe the "dialogue boxes". These are windows that appear on the screen as parts of a task sequence and disappear after a user action. Commonly we find the *dialogue boxes* to be text-oriented with buttons and text-entry fields. This use of the concept of *dialogue* in the human-computer interaction seems to be far away from the general concept of *dialog* in

word *dialogue* is used in very limited contexts. Many would agree that their job is to design the medium through which the communication between human and computer takes place (*interface*), but surely many would consider this a very limited view.

Hartson and Hix (1989) mentioned the problem of misunderstanding the concepts of *dialogue* and *interface* and although they provided a definition for these concepts, they use them synonymously 'just as they are in most of the literature.' They defined the *dialogue* as 'the observable two-way exchange of symbols and actions between human and computer,' and *interface* as 'the supporting software and hardware through which this exchange occurs.' According to this definition, *dialogue* is limited to the 'observable' exchange. Therefore, all the user-dependent psychological variables that cannot be observed directly are excluded from this definition. It is no longer debatable that to perform

Visual Design of Interaction, Dialog, or Interface?

tion at CHI '94. She frequently mentioned the word *interface* to refer to the work we do, and only few times mentioned the idea of *interaction*. She said that she presents herself as an 'interface designer,' not as a visual interaction designer. This situation made me wonder about the meaning of our work. What does it mean to be a visual interaction designer? Are we designing *interaction*, *interface*, or *dialogue*? This column intends to present different ideas of the concepts of *interaction*, *interface*, and *dialogue*. It also intends to provide a viewpoint for visual interaction design, that may help us in finding our identity within this complex and diverse area of study.

The word *interface* has been used in different contexts to refer to the boundary or interconnection between two systems, in this case, human being and computer. According to the general systems theory, a boundary defines the lim-

its of a system, determines where the system ends and where the environment starts, and it is the medium to communicate from the environment to the system and from the system to the environment. As visual designers we should ask ourselves: do we design the medium to communicate or the actual communication process?

The word *interaction* means 'reciprocal action or influence', and is formed by two parts: *interaction* = *inter* + *action*. In the human-computer interaction area, this definition seems to imply the coexistence of humans and computers. It seems that the idea of reciprocal action puts a human and a computer at the 'same level of capabilities.' From this perspective, the word *interaction* may not reflect the way humans and computers work together in these days, but I believe it reflects the way we want to work with the computer in the future.

Although there is a lack of consistent definitions in the human-computer interaction field, the word 'interface' seems to be very well accepted to describe the work the human-computer interaction community performs, the word *interaction* is rarely used and the

research in human-computer interaction it is important to understand human characteristics. Theories of memory, human perception, human problem solving, and motivation are important in human-computer interaction. Therefore, according to this definition, 'dialog' does not seem to be the right word to describe the work of designers in the area of human-computer interaction. On the other hand, the definition of *interface* as the media for the exchange seem to be limited to the construction of the boundary between human and computer, without an observation of the interchange objects and processes.

Shaun Marsh (1990) defined *interaction* as having two parts: *dialog* and *interface*. This definition may provide a closer perspective to the type of work that a visual designer should perform. To have *interaction* it is necessary to have a medium to communicate and

symbols to communicate. The same medium can be used with different symbols, so that different interactions can be constructed in different task contexts.

The ideas presented before suggest that we should concentrate on the design of interactions that implies the design of interfaces and dialogues. The design of interaction requires the study of the human, the computer, the interface, the communication language and the situations in which the communication may take place.

As visual interaction designers we must know how the human visual system works, how the visual information is processed, and how the human being reacts to different kinds of visual information. Knowledge of the human visual system will allow us to design better interfaces and communication dialogues to obtain the best human performance in the human-computer interaction. Although there are many unanswered questions related to the way the human visual system works, the basic general ideas of vision are pretty well established (Finkel & Sajda, 1994). Vision starts when light strikes the retina. Information is transmitted from the retina to brain areas, where different neurons respond to the characteristics of the light that contains discriminable features. According to the theory of vision we have specific areas in the brain that make us observe objects through light attributes as shape, color, texture, and size. We have also specific areas in the brain that make us to recognize where things are located in the visual field. From the visual perception theory we still cannot determine if high level factors control how we group stimuli into objects or if we assign a social meaning to the objects that we recall when we receive the visual stimulus.

In order to make the human-computer interaction more 'natural' and avoid possible 'transformation' processes in the human visual system, we must present information the most closely to the way the visual system works. Visual interaction designers then, should recognize the interface as made up of objects, distinguishable by their visual characteristics. Based on this principle,

we will be able to define our mission as visual interaction designers: Determine which visual characteristics at the interface bring the best of the human and computer dialogue for every specific interaction. Here are some questions that I think will support the focus of study for visual interaction designers:

a) What are the visual characteristics that make an object identifiable? b) Which characteristics work better for different tasks? c) How can the human manipulate the visual characteristics of objects? d) How the visual characteristics of objects influence the actions of humans?

I believe that a visual interaction designer must work within this context to provide the highest benefit to the human-computer interaction.

Now, after a little reflection about the meaning of words, I support the idea of calling ourselves *visual interaction designers*, despite the popularity of the title *interface designer*. To be a visual interaction designer it is not enough to be a good drawer or artist. Visual Interaction Design means to understand human mind and computer processing, it means to produce the optimal conditions for human and computer communication, it means to turn art into science.

References

Finkel Leif H., Sajda Paul. *Constructing Visual Perception*. American Scientist. Vol. 82, No. 3, May 01, 1994, p. 224-237.

Hartson Rex H., Hix Deborah. *Human-Computer Interface Development: Concepts and Systems for Its Management*. ACM Computing Surveys. Vol. 21, No. 1, March 1989, pp. 5-92.

Marsh Shaun. *Human Computer Interaction: An Operational Definition*. SIGCHI Bulletin. Vol. 22, No. 1, July 1990, pp. 16-22.

Cleotilde Gonzalez is a Ph.D. candidate in Management Information Systems at Texas Tech. University. Her research work involves the investigation of the perceptual and cognitive processes required for decision making supported by animated human-computer interaction. She can be reached at

cleo@unicorn.acs.ttu.edu,
or by paper mail at P.O. Box 4734,
TTU, Lubbock, TX 79409, USA.

Visual Interaction Design is a Special Interest Area of SIGCHI focusing on the visual aspects of interaction in interface design. The goals of the Visual Interaction Design Special Interest Area are to act as a focal point for visual interaction design interest within SIGCHI, to advance visual interaction design as an integral component of HCI, and to integrate visual interaction design with the rest of SIGCHI.

To contribute information to this column, send email to wadlow.chi@xerox.com or write to Maria G. Wadlow, Transarc Corporation, The Gulf Tower, 707 Grant Street, Pittsburgh, PA 15219, U.S.A.

To subscribe to the Visual Interaction Design ListServ group, send email to listserv@vtvm1.cc.vt.edu with the single line:
subscribe VISUAL-L <your full name>
in the body. To unsubscribe, send mail to the same address with the single line
signoff VISUAL-L
in the body. To communicate with members of the Visual Interaction Design community, send email to visual-l@vtvm1.cc.vt.edu (that's a digit one after the m).

Maria Wadlow is a writer and user advocate for Transarc Corporation and is the founder of Pyxon Studios, a consulting company which specializes in interface design.

