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# “It’s About the Information Stupid!”: Why We Need a Separate Field of Human-Information Interaction

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**Abstract**

The past few years have seen increasing discussion of the need for, even the inevitability of, a field of *human-information interaction (HII)* —as either a major sub-branch of human-computer interaction (HCI) or as a separate field altogether. The “I” in HII implies a focus on information and not computing technology. But what does this mean? Is there any way to focus on information without also considering the supporting tools, applications, and gadgets that are enabled by computing technology? The panel will explore both the pros and cons in favor of a separate field of HII. Panelists provide a diversity of perspectives from several disciplines and research traditions including cognitive modeling and the study of human cognition, information science, information architecture, personal information management, ethnography and anthropology.

**Keywords**

Human-information interaction (HII), personal information management (PIM), information science.

**ACM Classification Keywords**

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

**Introduction**

Discussion will explore the pros and cons of a separate field of human-information interaction (HII). The “C” in HCI may

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unduly focus attention on the computer when, for most people, the computer is a means to an end – the effective use of information. Trends towards a ubiquity of computing, an increasing transparency of user interfaces and the overall integration of computing technologies into our everyday lives may push computers into the background as a basic service – like electricity or heating. If our computers disappear we are left with our information. And a field of HII could support a more productive meeting ground for the exchange of research between HCI and the information, cognitive, and social sciences. But what does a shift to HII imply? Is there any way to focus on information without also considering supporting tools, applications, gadgets, etc. which, in our time, are mostly based, in one way or another, on computing technology?

### **Position Statements**

*Stuart K. Card: What Would Human Information Interaction Be About and Why Would It Be About It?*

If one observes the history of interactive computing from, say, Whirlwind up to the present day, one is struck at how the computer gets harder and harder to see. What one does see, though, ever more prominently, is some representation of information. And instead of vanishing like the computer, interactive information has evolved to have its ever more elaborate forms as digital documents and visualizations quite separate from the device on which it resides. In fact, with global networks, one could say information has been liberated to its own pure sphere. But the more profound aspect of this evolution is not that where we used to see a computer, we now largely see information. Rather, it is that interaction with information, say in a web browser, now depends more on the semantic content of information than on the form, as it did when HCI studied text editors. These transformations in our field are more than metaphorical; standard discount usability

methods, for example, don't work the way we are used to for such systems. The story becomes even more complicated when we talk about information being embedded in ubiquitous computing environments, with many users using the same information perhaps in different simultaneous forms.

I claim it is useful to face the facts directly and to develop a new body of knowledge around human information interaction, concerned with how to design machines and environments in which people interact with information. There would be at least seven themes to focus on.

- (1) *Adaptation to the cost structures of information.* Users maximize information gain per unit cost.
- (2) *User awareness.* The system extracts and models user behavior dynamically.
- (3) *Content and context awareness.* The system exploits the semantics of its text or sensor content.
- (4) *Representation.* Re-representation of information is a key to interpreting it.
- (5) *Externalization of cognition.* Most significant cognition is too complicated to fit in the head.
- (6) *Device independence.* User interaction focuses on information abstractions rather than device controls.
- (7) *Supervisory control systems.* The system is semi-autonomous and has mixed initiative.

These themes suggest where to focus for developing a supporting science of human information interaction, not so much to replace HCI, but to grow a necessary subdiscipline.

*Raya Fidel: HII--A New Interdisciplinary Field*

Researchers in the Library and Information Science (LIS) area have been using the term human-information interaction (HII) for over a decade. It reflects out recognition that the work we do focuses on the relationship between

people and information and that the process itself is interactive. Although technology has played a crucial role in this relationship (even in the pre-computer era)-and therefore studying it and understanding its impact is essential-some of us believe that information technology should be developed with the goal of creating tools that facilitate effective relationship, rather than for its own sake.

I also believe that information technology itself-not only the algorithms, the interface, the content, or the information structure, etc.-should be motivated and guided by human needs when interacting with information. That is, the relationship between HII and the C is a two-way street. The operation of HII indeed depends on C, but its conceptual side has to be independent of it. Moreover, HII is the only one that can inform C about what is required for HII to operate effectively. The challenge is to keep HII independent of C and at the same time make sure that its research is relevant to the development of C. The experience in the study of HII gathered by the LIS community complements that of CHI researchers. The "new" area of HII can be the meeting place of these two communities, truly interdisciplinary with two parents: CHI and LIS.

*Nahum Gershon : Beyond Just HII and HCI*

It was a grey day in Darmstadt in 1995 at the WWW conference. I was getting sick & tired of hearing endless discussions on how many times one needs to click a mouse to get something on the screen. I then realized that, in spite of the fact that a good HCI is a must, we need to understand something more fundamental than that- how humans interact with information regardless the medium they use. So after coining the term Human Information Interaction (HII) an area that includes also relevant research done before outside the HCI community, I immediately organized

the first Workshop on HII at that same WWW meeting. A number of similar workshops followed in other conferences. The idea was not to bury HCI but rather supplement it with something essential that is generally ignored by the HCI community.

I nowadays think that HII is only part of that story. There are many other essential components or things to consider and these aspects cannot be always studied in isolation. And, the list is not limited to the areas mentioned in the following sentence: *It's about the information, humans, computer, social structure & interaction, task, experience, interaction, interface, relationships, medium, technology, genre, and others, stupid!*

*Peter Morville : It's Time to Drop the Computer*

The complexity of user experience in today's environments is not expressed well in typical models of human-computer interaction. HCI approaches are optimal for applications and interfaces where designers exercise great control over form and function. HII approaches are optimal for networked, transmedia systems where control is sacrificed for interoperability and findability. At the crossroads of ubiquitous computing and the Internet, users may find and interact with objects through a variety of devices and interfaces. The context of use is difficult to predict and impossible to control. And so, the emphasis shifts from interface to experience, and from HCI to HII.

This does not mean the study of applications and interfaces become irrelevant. On the contrary, it becomes more vital, but only within an expanded purview that includes information seeking behavior, shape, genre, classification, search, and retrieval. Moreover, semantically speaking, the C in HCI is an artifact of the past. It makes no sense to privilege the computer when it's the user, the experience,

the interaction, and the information that really count. Change is well underway with the emergence of interdisciplinary "i-schools" and the maturation of bridge professions such as information architecture. HII is here to stay. How long will it take for HCI organizations and individuals to drop the computer and embrace the future? That is the question.

*Bonnie Nardi : Information, Interaction, and Activity*  
Moving to a focus on information is a step in the right direction, but the step beyond that is to focus on human activity. We need to find ways to more fruitfully use computers to organize multiple activities, set up meaningful contexts for work, and collaborate with others. Making headway on these problems is confounded by the existence of separate applications and rigid schemes such as files-and-folders, but even without such constraints, we still need to understand activity in a more global sense to design to support such functions. Understanding information is part of that, but not all of it. Theories such as activity theory and phenomenology that view technology as a mediator of human activity are a good baseline for getting started. Field studies of how people work are useful for uncovering people's practices and problems.

In one study I did, I learned that personal social networks are critical to the way many people think about their information and communication. I don't think I could have seen that by focusing on information. With colleagues, I designed a system, ContactMap, based around a visualization of a personal social network, and included both information (documents, etc.) and communication functions (email, etc.) attached to virtual representations of contacts. Understanding how people relate to other people is just as important as understanding how they relate to information. We could call everything information, but that muddles

things. Activity encompasses both information and communication. It encompasses how we work with tools and how we relate to other people.

We did not ultimately see a way to make the ContactMap prototype a real product because it relied too much on existing software, such as email systems, that we could not control. At some point, a complete redesign of these systems in a more open fashion will be necessary. When that moment comes, we want to be ready with good analyses of people's activities, so we can use that as a springboard for good design.

*Daniel M. Russell: HII: Schism or New Faith?*

The proposed schism—separating HII from the mother church of HCI—is dangerous and heretical. But like many such ideas, it has a certain raucous appeal, shifting emphasis directly onto the human-information membrane. It might not be such a bad idea...

My life at an internet search company is a daily lesson in the pragmatics of information presentation, information architecture and human information use patterns—the II part of HII. It's pretty clear that many of the methods classical HCI teaches us just don't scale to internet-sized problems or information use. At the same time it's becoming increasingly obvious that "human information" processing these days is often both infosphere-based (fast, wired, highly diverse) *while simultaneously* incorporating mundane content (slow, local, multimodal). People use all kinds of information resources—both computational, as well as the narrow, popular, cruffy, handwritten and idiosyncratic.