

Stop Using “Users”! An Examination of Word Usage in CHI Literature and the Impact of Objectifying People

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Adam Bradley¹, Mark Hancock¹, Sheelagh Carpendale²

¹University of Waterloo

²University of Calgary

Waterloo, Ontario, Canada

Calgary, Alberta, Canada

adam.bradley@uwaterloo.ca, mark.hancock@uwaterloo.ca, sheelagh@cpsc.ucalgary.ca

ABSTRACT

In this paper we describe, through a philological and philosophical investigation, what we think the effects of the word “user” are on HCI research. By recognizing that words themselves carry historical meanings and semiotic/semantic suggestions we will attempt to show that a shift in terminology, replacing “user” with “human” or “person”, will positively affect not just our use of jargon, but our fundamental concerns with design. Through a study of the word itself, its historical usage in the English language, and then its usage in the corpus of CHI scholarship, we will attempt to show that a consideration of these factors could drastically change how we envision and interpret the work of our own community.

Author Keywords

User, Human, Person, Semiotics, Philology, N-Grams

INTRODUCTION

“Treat people as if they were what they ought to be, and help them to become what they are capable of being.”

- Johann Wolfgang von Goethe (1749-1832)

The literary critic Northrop Frye[1] wrote in his book *Words with Power* that “when we read (or otherwise examine) a verbal structure, our attention is going in two directions at once. One direction is centripetal, trying to make sense of the words we are reading: the other is centrifugal, gathering up from memory the conventional meanings of the words used in the world of language outside the work being read.” [1]. This definition can be interpreted as the split between *semiotics*, what the words we read signify, and *semantics*, what the words we read mean to us. To fully understand this concept we must recognize that “signification” can be thought of in this context as how the words connect to the meanings we attribute to them. This is a function of language and helps us to understand how the words we use have no meaning in and of themselves but point to meanings that as a culture we have attributed to them. Language itself is a dynamic entity and “meaning” is installed in many ways.

In this paper, we will consider how, as a community, we have attributed a derogatory meaning to the word “user”. For example, the following is a sentence chosen from a CHI paper with a very high occurrence rate of the word “user”

(the full investigation of CHI publications appears later in this paper):

*“The importance of an early and on-going focus on people in interactive system design is widely accepted. However, in practice, involving **users** poses many problems and requires designers to balance conflicting demands.”[2]*

We are calling in this paper for a reconsideration of how we use the word “user” in our research. If we simply replace the word “user” with the word “human” or “person”, the degrading effect of the original is immediately clear:

*“The importance of an early and on-going focus on people in interactive system design is widely accepted. However, in practice, involving **humans** poses many problems and requires designers to balance conflicting demands.”*

This is the practical application of our hypothesis that will be examined in detail at the end of this paper. The distinction between these two sentences is subtle and by investigating our terminology through both of these concepts we hope to highlight inherent problems with the words we use in our research. We think that, with a clearer understanding of all of the factors that go into giving the words we use power, it will become evident that a change in lexicon is in order. In his work, Frye is trying to explain a general framework for understanding this power of words. It is specifically this power, both historical and metaphorical that we will address in this discussion. In this paper we will be looking at the use of the word “user” in HCI papers and the power it holds in these contexts; it is an investigation into the general philosophy of HCI as a design centered discipline and how the words that we use in our publications affect this design process. The general ethos of human-computer interaction (HCI) is to place the human at the centre of the design thinking (this is directly acknowledged by the fact that we have chosen HCI as a title) and we acknowledged the importance of words by calling it “human-computer interaction” rather than “user-computer interaction”. The idea of thinking about humans is already a central tenet of our work and in this paper we intend to highlight how the terminology we use does not always reflect these design goals. The main problem we face is that we use “user” all the time—we even call it user-centered design (UCD) and do user studies, etc.—but by investigating exactly how the terminology that we employ actually

contradicts the design imperatives of our discipline we believe that we can make a case for a shift in the words we use.

In this paper we will use Frye's framework (interpreted as a semiotic/semantic dialectic) and contrast that with the philology of the word "user" to establish how what makes up the terminology that is used in HCI is an important consideration when it comes to the design aspect of our field. By understanding what gives the word "user" its power, we believe we can positively affect our future design decisions and, as Goethe so aptly points out, treat people as if they were what they ought to be. One of the main problems that we see as imminent as a result of the continued use of the current terminology, is that it has the possibility of alienating the designers from those who they are designing for, the terminology has an "othering" effect which negatively skews our opinions of the public and over time can have a lasting effect on design. We feel that with some careful consideration of our terminology, a greater understanding of whom we are designing for will be achieved and a different kind of design imperative will be possible. We are in no way suggesting that we currently practice bad design; instead we are simply suggesting a method for improving our already impressive track record at CHI.

Our paper is structured around an investigation of word use in HCI research through the lens' of:

- Semiotics – In this section we investigate the phenomenon of signs and how it applies to HCI research.
- Pragmatics – This section is about how we receive and interpret different signs and looks into the computer as a semiotic medium.
- The Scarring Word – We look briefly at how literary critics interpret the problems we are outlining and connect their interpretations to the world of Human Computer Interaction.
- The Psychology Debate – We look into the "subject" / "participant" debate from 1998 that helped change the terminology used to refer to humans in psychology papers and had itself a lasting effect on HCI papers.
- Philological Investigation – In this section we trace the history of the word "user" from ancient Rome to the present day to see exactly how it came to be used in its current form.
- N-Gram Analysis – Using Google N-Grams we survey the historical occurrences of the word "user" and our suggested alternatives "human" and "person" throughout the corpus of English books in an attempt to trace the dynamic nature of the words.
- CHI paper Analysis – In this section we perform a similar analysis on the entire CHI corpus from 1982 – 2011 to try and locate the argument within our own research as well as take a closer look at specific instances

where the syntax of sentences in CHI research create a subject/object split between the words "user" and "human" or "user" and "person".

We intend to show how words with power operate within our research and to investigate the semiotics and semantic history of the words to ground our argument in a terminology that is generally accepted for this type of investigation.

SEMIOTICS AND SEMANTICS

In this section we outline a theory of language that we believe will be useful in our discussion about terminology in CHI papers.

In most instances semiotics is defined quite succinctly as the study of "signs". Throughout the history of the discipline there has been significant debate as to what this actually means, and although it can be shown that the roots of semiotics as a discipline can be traced back to ancient Greece (specifically Hippocrates and his implementation of a symptomology for assessing disease in humans), we are much more concerned with more contemporary notions. Semiotics tends to split into two separate factions that are hard to reconcile.

Saussurian semiotics[3], created by Ferdinand de Saussure and published posthumously, outlined that language can be analyzed as a formal system of interacting units. One of those units, the linguistic sign, is made up of two parts, the signifier and the signified; an example of the former in its most basic is the word itself. It stands for something else that we generally accept to be the case. What is important to understand about the sign is that words in the Saussurian view do not actually hold any meaning within them; they are signposts that point us in the directions of what we are taught by our culture to understand as meaning. The "signified" on the other hand is the actual concept that we are talking about. If we were to appropriate a Saussurian view to our current discussion, we would say that the word "user" is the "signifier" and the actual people who use the technology we develop are the signified. This second distinction focuses not the word "user" itself, but on what the word means to us in our culture. This idea carries with it problems of interpretation that have the very real potential of changing the focus of our research. Although this may be a subtle distinction, understanding what is involved in this type of meaning making has the potential to greatly influence the way we discuss our own work. Our main contention is that from the Saussurian perspective, there is a break in what the HCI community sees as the signified of the term "user", that its semantic meaning is different enough from what we regard it to be as to have a negative influence on HCI design.

The alternate school of semiotics is that of Charles Sanders Pierce[4], whose work on signs came out of the tradition of formal logic. His main contention is that everything is a sign (this is not limited to words) but only in relation to something else. Pierce's system is made up of the *sign*, the

object, and the *interpretant*, all of which operate together in a linguistic system.

It seems to be that most semioticians subscribe either to the work of Saussure or Peirce, but their basic premises are equally applicable to the issue of word use even though they disagree on the actual point within their systems that this actually occurs. Their applications of these different views treat the problem we are outlining as occurrences that get executed at different parts of the linguistic system. What this means is that both theorize about similar ways in which language transmits meaning, they simply do not agree at what point in a linguistic system that this becomes the case.

In Peirce's semiotics we are concerned with the interpretant, or the moment when we interpret the meaning (semantics) of the sign. We will show in our philological discussion how in the case of the word "user" that we are standing on considerably shaky ground when interpreting the word. This is partly because of the way that words themselves are interpreted. In Peirce's treatment no system of meaning is ever closed, it is constantly referencing other signs. If we accept that this is the case, it is not difficult to see how the misinterpretation of the word "user" could thus have a lasting effect on what we create with that sign in mind. The implications of this interpretation are not only that language is dynamic, with meaning constantly being reshaped and reimagined, but also that the way we use language is also dynamic. For Peirce, the fact that all signs are constantly referencing other sign makes it much more important to understand the signs we use and exactly what they are pointing to. In this paper we are attempting to show that the word "user" and "human" are not interchangeable, that they are different signs and that what they refer to is not only a meaning, but an encompassed history as well. When we think of words having certain contexts or connotations we must realize that, although very complicated, these systems of meaning come from a long history of word use and interpretation. By looking at our own terminology and what those signs actually are referring to we believe we can gain insight into our design process and perhaps at ways to improve it.

PRAGMATICS

In this section we extend the idea of semiotics further to include the transmission of ideas between signs and humans who receive those signs.

In an investigation such as ours, when we are considering the semiotics of specific words, it is helpful to also consider the pragmatics of that word. Pragmatics is the study of how we transmit meaning from signs to the people who interpret them. This depends not only on linguistic knowledge, but also on how and why we use certain words, what the speaker (or in this case, writer) intends and an understanding of the context of the utterance. *Pragmatic competence* can be

defined as the ability to understand these functions of words in these terms. Noam Chomsky, a famous linguist who had a profound influence on computer science, defines pragmatic competence as that which "places language in the institutional setting of its use, relating intentions and purposes to the linguistic means at hand" [5] This is a very tidy definition of what pragmatics is and explains nicely how it is concerned with context and the transfer of meanings through these contexts to the actual people who are receiving these messages. Balconi and Amenta[6] tell us that "[i]ntrinsic to this decision-making process [in using language to communicate] are several principles that concur to define the nature of *pragmatic competence*. In particular, individuals make choices and build strategies based on some of the unique properties of pragmatic/communicative competence, such as:

- **variability**: the property of communication that defines the range of communicative possibilities, among which is formulating communicative choices;
- **negotiability**: the possibility of making choices based on flexible strategies;
- **adaptability**; the ability to modulate and regulate communicative choices in relation to the communicative context;
- **saliency**: the degree of awareness reached by communicative choices;
- **indeterminacy**: the possibility to re-negotiate pragmatic choices as the interaction unfolds in order to fulfill communicative intentions;
- **dynamicity**: development of the communicative interaction in time".

For our discussion the most prudent category is *saliency*. By understanding how the actions in our research affect the degrees of awareness of our communication, we can better choose terminology that will aid in the design of technology. In this paper we define a type of pragmatic competence with the word "user". In terms of semiotics, the constant referencing of other signs is not only a factor in the terminology we use to describe our practices but also becomes apparent in the mediums that we design through; it is helpful in this debate to consider how the computer itself is a sign. One thing to consider in this process is that the medium that we design for is in itself a sign; the computer itself is a semiotic device, transmitting and translating signs constantly. Usual communicative practices tend to go from the sender to the channel of transmission and finally to the receiver (see Figure 1). But in HCI the medium is always part of this communicative process and acts as a filter between what we design and those who are interpreting those signals (see Figure 2).



Figure 1. Communicative practices between people are usually thought of as communications through direct routes, from one person to another

Subject vs. Object Usage

This section outlines how the computer is a semiotic sign and how this is one of the reasons that the word “user” is used in such a way as to demean the persons we are actually talking about.

Part of the pragmatic context of the word “user” in the design process is that it shifts the focus from the “human” as subject to the “user” as object and pulls our design imperatives away from the receivers of our communication focusing on the medium through which we communicate. We must consider our interface designs as being signs themselves, and if the computer is a semiotic device, we must consider who is interpreting these signs and what their pragmatic competence is.

What we are suggesting is that by considering the receiver to be a “user” we are actually elevating the status of the medium more than the human on the other end of the transmission (when we begin to talk, write or design). By doing this we are limiting the effectiveness of what we do. By implementing terminology such as “human” into our research, it forces a pragmatic understanding of the communicative process and a consideration that there is in fact a human, with wants and needs at the other end of the information pipeline. In essence, part of the power that words hold is that they carry with them all of this semiotic and pragmatic information and by constantly communicating with our own community using these words, we are reinforcing the negative aspects of those words and shifting the focus of our understanding to a part of the communication spectrum that can have negative impacts on our designs.

Consider the idea of interface skins. The ability of people to skin their programs means that the communication pathway between designer and the people using those designs may never end up looking as the designer intended. By focusing on the “user” and thus on the medium, the design will not be reaching the people who use it with a full consideration of their idiosyncrasies. By considering thoroughly this communication spectrum and how our terminology affects design, we can make positive changes that ensure a thorough consideration of human factors moving forward. What we are calling for in this paper is a consideration of how the involuntary interpretations of the terminology we use has a



Figure 2. Communicative practices mediated by a computer are often altered during transmission by the fact that the computer itself is a semiotic sign, injecting meaning into its transmissions

lasting effect by becoming a new *interpretant* for our design process and, as we see in literary theory from experts in interpreting these words as art, this interpretant has the potential to become a scar that affects the people to whom they refer.

THE SCARRING WORD

In this section we examine a literary interpretation of pragmatics and the lasting effects words have on the people that engage with them.

Murray McArthur, a noted Literary Scholar, has said in his lectures on the ancient Greek work *The Odyssey*, that the characters in the epic are scarred as soon as they are named, that the power of the word has a lasting effect on the characters themselves. In terms of our current discussion, this means specifically that as soon as names are attached to things (in the case of *The Odyssey*, characters in an ancient epic), they at once are given all of the attributes of that name. The name itself is an empty sign, but it points towards an entire history of the word and an entire meaning that comes along with that word. In the *Odyssey*, Odysseus is on an epic journey to return to his homeland of Ithaca, a return from his ten-year journey that has sent him, by the will of the gods, all over the ancient world. His name (the sign “Odysseus”) carries with it a famous history of his bravery and success in combat and when an island king finds out that he is in the presence of Odysseus, the character immediately becomes the history of his name, he takes on all the attributes that the king knows to be part of the name Odysseus. This is the scar. It is the lasting effect and historical attribution of words and their meanings. In one humanities model, literature and art are expressions of what make us all fundamentally alike, they are expressions of our humanity. When applying this idea of the “scarring word” to HCI research through the lens of semiotics, we contend that the word “user” is wrought with a history that scars as soon as it is used. And, deeper than this that we have been so ingrained with the alternate definitions of the word that they negatively affect the design process involved in our research. We will see how the word ‘user’ has become a scarring word not just by association with negative connotations but by the way we use it.

THE PSYCHOLOGY MODEL

In this section we investigate how psychological research has set a precedent for the type of linguistic argument we are making in this paper.

There is precedent for this type of rationale that can be found in the conflict between the word “subject” and the word “participant” in psychological research. In 1995 The British Psychological society “[a]fter noting that psychologists owe a debt to those who agree to take part in their studies, who therefore deserve to be treated with the highest standards of consideration and respect, the society recommended that the term “subject” should be abandoned and replaced by “participant” [7]. In 1998 P.M. Boyton[8] published an article in the British Medical Journal entitled “People should participate in, not be subjects of, research” in which he called for terminology reform in psychological research studies which would shift from the generally accepted word “subject” to that of “participant”. This action was spawned by a belief that the words that psychologists used held power and had an influence over how they were conducting their research studies. Graph 4 is an n-gram analysis of the use of the words “subject” and “participant” in CHI literature published since the first SIGCHI conference in 1982. It is clear that in or around 1998 the use of the word “subject” was replaced by the word “participant”. We see the imperative for these two words being very much the same as the words “user” and “human”.

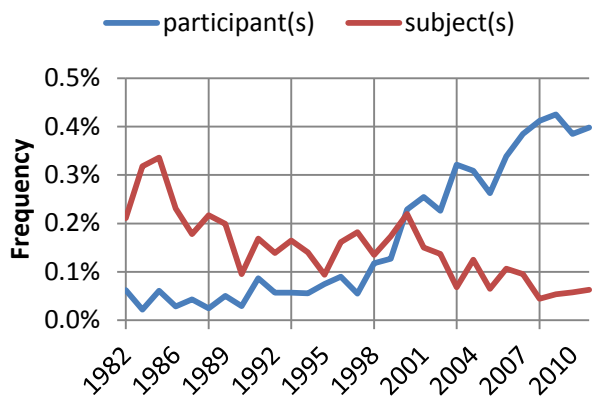


Figure 3. Frequency of word usage for the words "participant" and "subject" from the dataset of all CHI papers published from 1982 - 2011.

What the psychologists were in fact doing was realizing that by labeling their “participants” as “subjects” that the pragmatics of the word “subjects” was negatively impacting their work. In terms of HCI this is the same process that we suggest is happening with the word “user”, that as a community we do not fully understand all of the implications of its use and are being affected by it in our research. It goes without saying that psychology is a large part of HCI and our community has already shown that they support this kind of thinking by changing their terminology to match that used in psychology. What we suggest is that there are

27 B.C	Def. 1.a	General use of things
1935	Def. 1.b	Drug use
1965	Def. 1.c	Computer use

Table 1. Approximate dates for meaning change for the word “User”.

other words in our lexicon that act in the same ways as the word “subject” and that they also need to be considered while creating new designs, conducting our studies, and publishing our papers. We suggest that this ideology needs to be incorporated into HCI design, that the term “user” functions much like the term “subject” in that it demeans the people that our research is being conducted on and for. By considering how these words operate and how their history has affected their meaning we can then gain a larger picture of exactly how their use is affecting our work.

PHILOLOGY OF THE WORD “USER”

This section outlines the history of the word “user” and how its meaning changed over time. This is important because it helps to correlate time periods when the word came into greater use and when it appropriated it negative connotations.

John Peile defines Philology as “the science which teaches us what language is. The philologist deals with the words which make up a language, not merely to learn their meaning, but to find out their history” (Peile 5). The word “user” can be traced back to the Latin *ūsus* which is defined as the act of using a thing, its application, employment, and equivalent. It was adapted as the agent noun from *ūsus* describing the one who performs the action of use. It is the past participle of *ūī* to use + *-tus* suffix of verbs of action. It then passes through Old French as the word *user* and between 1175 and 1225 passes into Middle English in the form *Usen*, which is where we inherit the form we now know. The current definitions of the word “user” in English are as follows:[9]

1.a One who has or makes use of a thing; one who uses or employs anything.

This is the definition that we inherit through history.

1.b A person who takes narcotic, etc., drugs. origin U.S.

The first known occurrence of this definition is from 1935 by A. J. Pollock where he defines “user” in *Underworld Speaks* 129/2 as “a person addicted to any of the poisonous habit forming drugs; a hop-head; dope fiend. This is the definition that we are interested in and has clearly preceded the definition of user in relation to technology and computing.

1.c A person or organization that makes use of a computer.

This definition first appeared thirty two years later in 1967 in the Cox & Grose Organization & Handling Bibl. Rec. “by Computer 84 The valves dcn, date, day, etc. are the user-assigned names for the bibliographic date fields”. It is not until 1979 that the term “user friendliness” is coined by

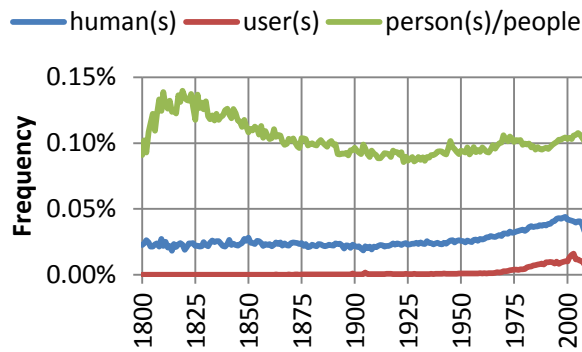


Figure 4. Frequency of word usage for the words “human”, “user”, and “person” using the Google Books *n*-grams dataset from 1800 to 2008.

Harlan Crowder to represent the inherent ease (or lack of ease) which (sic) is encountered when running a computer system”.

What is important to gauge from this brief history of the word is that it was a full thirty years after the term “user” was appropriated to describe drug takers that it was then used as the go-to noun for the emerging computer revolution. Language in general and the meanings of words specifically are quite dynamic. Over time, many factors including but not limited to cultural shifts, politics, technological trends and editorial practices shift and change languages constantly. What is interesting about the word “user” is that its meaning was quite static from the time of the Roman Empire until the turn of the twentieth century. The word’s usage spiked during the second industrial revolution where manuals for new machines included the word “user” and then changed drastically in around 1935 when the words “drug user” started to be used. We can only speculate why the meaning of the word shifted, but by performing an analysis of Google’s *n*-gram [34] from the English language we can begin to assemble evidence for this change.

Impact of Philology on the Practice of HCI

In this section we explain how knowledge of the history of the word “user” impacts HCI design.

The use of the word “user” increases dramatically in and around the 1960’s and the computer revolution, but it was an appropriation of a word that had just recently taken on negative connotations. We accept that language is constantly in flux, but a word that has held its meaning for 2000 years and suddenly takes on two new meanings within 30 years of each other is problematic. If in 1935, a 2000-year-old word suddenly takes on a new meaning, it follows that the new meaning had a powerful influence on the stable history of the word. We must also acknowledge that the fact that thirty years after this new semantic acquisition, when yet another meaning was appropriated for the word, that the word was still changing and that this may be an indication that the word is in fact unstable. In our opinion, this leaves us with two scenarios, both of which we believe can have a

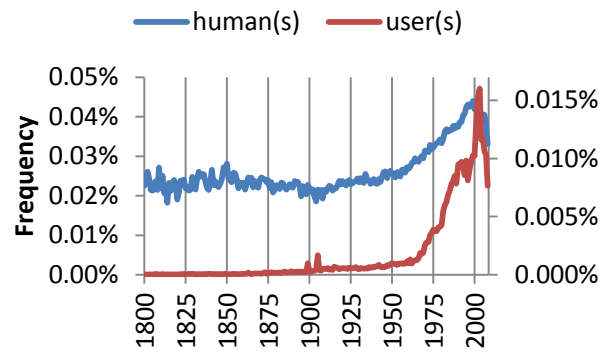


Figure 5. Frequency of word usage for the words “human” and “user” from the Google Books *n*-grams dataset from 1800 to 2008, plotted along different vertical axes to highlight change over time.

negative impact on the way we as a community design technology.

In the first scenario, the connotations of drug use that were assimilated into the meaning of the word in the 1930’s had enough power to shake a 2000 year old meaning. This could mean that this definition is quite powerful and must be considered as part of the pragmatics of the word. If this is the case, then we must consider how this negatively impacts our view of those people we are designing for. If we believe them to be “users” in the sense of being dependent on technology as opposed to participants in the technology we design then we feel it is quite obvious that this understanding of our target audience can have a negative effect.

If on the other hand the quick turnover of the words meaning signals instability, then the word “user” is in flux and our consideration should lay in the fact that a word that is so heavily in flux is not the best one to be using as the subject of our research pursuits. Ideally in this case we would want to employ terminology that is much more stable (as we believe the words “human” and “person” are) to describe the practices of our discipline.

Whatever the case may be, it is disconcerting that this seemingly innocuous word can carry with it such a bevy of concerns. The good news is that the solution is quite simple and accessible and we believe will stabilize our usage when describing the people we are designing for.

n-GRAM USES OF WORDS

In this section we perform an *n*-gram analysis on several different words: user(s), human(s) and person(s)/people, to help understand how the use of the words changed over time.

To get a basic sense in the English language of the cultural history of the words in question, we present three graphs taken from the *n*-grams dataset. In Figure 3, we have plotted the words “human”, “user”, and “person” to show how the words are used over time (we have combined the counts of both singular and plural uses, as well as instances that

begin with a capital letter). We can see clearly that, up until the turn of the twentieth century, the word “human” is very active in the language, where the word “user” is quite stable (and more rarely used); this sudden shift is likely due to an influx of manuals for steam powered machinery. Then, its use escalates until the 1960’s when it begins to climb aggressively. In order to see the scale of the movement of the word usage, Figure 4 shows the words “human” and “user” plotted along different vertical axes, but still superimposed. From these two graphs it becomes apparent that a major change had begun with the word “user” around 1900 and has continued up until the present day.

This first argument we would like to make is that the sudden and dramatic increase of the use of the word “user” since the computer revolution in the 1960’s has brought with it the negative connotations that the word picked up only 30 years prior and that the power of the word “user” inherently holds this negative spin within it. The concern is that the semantic meaning of the word is thus greater than what it is used for in literature and specifically CHI publications and that our designs are influenced by the history that is held within the words.

The second is that in CHI publications there is a noticeable trend of the word “user” being employed as the object of action as opposed to the subject of a sentence (like “human” and “person” tend to be). Through an investigation of the actual CHI literature what follows is an illustration of this hypothesis.

THE TERM “USER” IN CHI PAPERS

In order to be able to analyze the use of terms in HCI research, we parsed the 30 years of CHI publications (1982-2011). To accomplish this, we downloaded the PDF versions for each year and counted instances of each word using the optical character recognition (OCR) already provided in these documents for years 1982-2000 and the digital text provided in the documents for years 2001-2011. We present graphs of the usage data, calculated using the same technique as described by Michel et al. [34] for Google Books data (the number of instances of the n -gram in a given year divided by the total number of words in all publications for that year). Note that we only calculated 1-grams for this dataset and our word counts were case-insensitive. Our parsing algorithm was also less sophisticated than that provided for Google Books. Since we were primarily interested in instances of the words without punctuation, we removed all punctuation in our word counts. For example, “human-computer” would become “humancomputer” and not tallied in the count for instances of the word “human”.

Our analysis shows that there appears to be a correlation in regards to the 1998 call from psychological sources to change their terminology and that the crossover of the upward trend of the word “participant” and the downward trend of the “subject” shows that the HCI community is already well versed in changes of this type. Our goal is to see the already downward trending use of the word “user”,

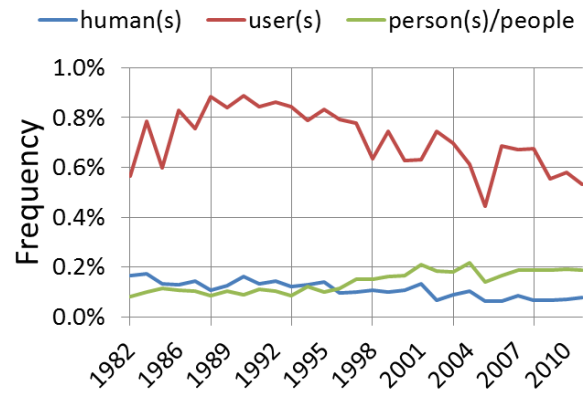


Figure 6. Frequency of word usage for the words “human”, “user”, and “person” from the dataset of all CHI papers published from 1982-2011.

which we are claiming objectifies the participants of our design projects, cross over with the word human, a word we already use to identify ourselves as a community.

EXAMPLES OF USE IN CHI PAPERS OVER TIME

In this section we employ the same type of investigation from the previous section but apply it to all published CHI papers to try and connect our thinking about the language at large to the specific forum of HCI research.

To demonstrate the contrast between how the CHI community uses these different words, we have taken sample sentences from papers with the highest word counts over the thirty years of CHI publications. The results are shown in Table 2. We have also randomly selected sentences from papers from each decade to show how our use of these words has not evolved much in the past 30 years.

This excerpt is taken from a 1982 CHI paper and employs the word “user” in a very specific manner:

“One could argue that we are only producing a first draft, after all, and that the user could be expected to add connecting elements and punctuation while improving the substantive content of the draft” [10].

Another sample chosen at random from 1992:

“Similar graphics would be applicable to a variety of human-computer interactions where visual feedback is possible and may well lead to a more user-friendly system” [11].

and from 2002:

“Individual visitors obtain information about objects in their environment using a visual interface. This helps visitors maintain the flow of their visual task (looking at the room and its contents), which tends to reduce demands on user attention” [12].

In 2011:

“Designing technology as socially desirable should be explored in introducing new technologies, particularly for

Years	“user(s)”	“human(s)”	“person(s)” or “people”
1982-1986	"The user model in UC encodes the user's knowledge state and allows UC to tail its responses to the user." [17]	"When a human and computer perform similar tasks in parallel, it is important that an effective line of communication exist between the two entities." [18]	"The use of computers in the workplace has increased our opportunity to open new avenues of employment for handicapped people." [19]
1987-1991	"User modeling is important to many systems that attempt to adapt their behavior to users in order to interact more intelligently." [20]	"The goal of human factors research in an industrial setting is to guide quality product design." [21]	"KMS is designed to support not only people's individual work, but also their collaborative work." [22]
1992-1996	"When users are unduly influenced by the frame provided by the implementer, users' constructed understandings may be less reflective of their experiences with the new technology." [23]	"The paper proposes that some current problems in recruiting human factors methods to system design might be alleviated by means of a structured human factors design framework." [24]	"People meet for a variety of reasons: to discuss and share ideas, to argue and make decisions, to plan, and to socialize." [25]
1997-2001	"The importance of an early and on-going focus on users in interactive system design is widely accepted. However, in practice, involving users poses many problems and requires designers to balance conflicting demands." [2]	"Promoting the exchange and dissemination of human factors information, as well as educating co-workers about human factors has been a key goal for many in the human factors community." [26]	"While current awareness systems are useful, they support only a handful of the attributes that comprises awareness information and how people in the every day world use it." [27]
2002-2006	"We introduce Stencils, an interaction technique for presenting tutorials that uses translucent colored stencils containing holes that direct the user's attention to the correct interface component and prevent the user from interacting with other components." [28]	"HIPs, or Human Interactive Proofs, are challenges meant to be easily solved by humans, while remaining too hard to be economically solved by computers." [29]	"Those interactions are often the mechanism by which people learn relevant news and get updates on current activities, and by which people develop personal relationships with their colleagues, which in turn motivate them in their work." [30]
2007-2011	"In this paper we propose hidden markets, a new design paradigm that attempts to mask as much of the prices, account balances, trading constraints, etc. from the user as possible." [31]	"Turing's article stands as enduring evidence that the roles of human computation and machine computation have been intertwined since the earliest days" [32]	"This paper explores how homeless young people, aged 13-25, make use of information systems in daily life." [33]

Table 2. Samples of sentences from CHI papers with the highest counts of each word over the last 30 years.

technologies that involve learning or require acceptance for reluctant users" [13].

What can be seen by the broad stroke investigation is that across decades the context of the word “user” has stayed relatively static. The tone and use of the word in four randomly chosen samples all seem to be quite consistent.

When we do the same for the word “human” we get a much different and varied outcome. In 1992 and 2002 we see the human treated in the literature with what seems like a gentler tone:

“More recently, growing awareness of the role of the external environment for human problem solving and task performance has led to attempts to more adequately represent the use of external information in cognitive models” [15].

and that the human is regarded as having needs and that the user is regarded as having requirements:

“In summary, the results indicate that there are general human tendencies to experience artificially produced tactile button feedback with certain timing combinations” [16].

What we have found in general is that in the CHI literature humans are treated as the subject of the sentence: “general

human tendencies” and “human problem solving”, where in the second case, the user tends to be spoken of in the sentences we sampled as the objects of the actions, having something performed on them or for them. This is specifically why we are calling for this change, because in general, when we use the terminology of the “user” we tend to make it about the object of some action when in fact these users are still the same humans that in the field of HCI we are designing for.

RECOMMENDATIONS

We believe that the work of the HCI community has been of the highest caliber and if CHI 2011 was any indication, steadily improving. Taking some of the sentences we used above as examples and keeping in mind the concern between the word “user” generally being used as an object and the words “human” and “people” generally being used as subjects, we would like to envision what a change could bring about. If we reimagine the sentence:

“Similar graphics would be applicable to a variety of human-computer interactions where visual feedback is possible and may well lead to a more user-friendly system” [11].

As a sentence without the word “user” we get something like:

*“Similar graphics would be applicable to a variety of human-computer interactions where visual feedback is possible and may well lead to a more **human**-friendly system”.*

Or, if we take a sentence such as this one from 2002:

“Individual visitors obtain information about objects in their environment using a visual interface. This helps visitors maintain the flow of their visual task (looking at the room and its contents), which tends to reduce demands on user attention” [12].

And, reimagining it we get something like this:

*“Individual visitors obtain information about objects in their environment using a visual interface. This helps visitors maintain the flow of their visual task (looking at the room and its contents), which tends to reduce demands on **the attention of the people involved**”.*

In a sentence taken from a paper from CHI2011 it was written that:

“Designing technology as socially desirable should be explored in introducing new technologies, particularly for technologies that involve learning or require acceptance for reluctant users”[13].

We suggest a simple change in terminology to this:

*“Designing technology as socially desirable should be explored in introducing new technologies, particularly for technologies that involve learning or require acceptance **by people who show reluctance to its use**”.*

These are very simple substitutions, but we believe they can have lasting and large consequences. In the following example, a simple search and replace is not as effective:

“The importance of an early and on-going focus on users in interactive system design is widely accepted. However, in practice, involving users poses many problems and requires designers to balance conflicting demands.” [2]

If we simply replace the word “user” with the word “human” or “person”, the degrading effect is immediately clear:

*“The importance of an early and on-going focus on **people** in interactive system design is widely accepted. However, in practice, involving **humans** poses many problems and requires designers to balance conflicting demands.”*

We argue that a more careful consideration of the intention of the second sentence is in order. For example:

“However, in practice, conflicting demands from people with different needs and desires can be difficult for designers to balance.”

Our recommendations are as follows:

1. Go through your papers before submitting them for publication and remove the word “user”, substituting in words and clauses that do not demean the people we are designing for.
2. Don’t “replace all” [in a word processor] because of the subject object problem we have talked about. We are suggesting that we need to take the time to rethink how we express ourselves in terms of our own research and that this action will in fact have positive consequences.
3. To understand how these actions can have a negative impact on design and as a community buy into the fact that the way we describe our work is important and has consequences.

CONCLUSION

In this paper we have outlined one way in which words can operate on us to affect the way we think and interpret our research. We have looked at how semiotics and pragmatics affect HCI research, how the history of the words we use can affect our designs and how within the CHI corpus our already excellent track record can be improved upon with a simple shift in lexicon. The change we are calling for takes no extra work, only extra consideration of the fact that the people we design and create for are not objects, but people; we want to recognize that the way we talk about people influences what and how we think about them and that by changing our words we can have not only a positive impact on our own community, but a positive impact on the technology that we bring, through our research, to the public.

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