Chapter 13. Collaborating on the Interface: Rhetorical and Hermeneutic Theory for User Experience Design

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Abstract. In this chapter I take up a longstanding problem in design, the question of how meaning gets made, and consider the question in the context of graphical user interfaces. After developing satisfactory definitions for experiences and interfaces, and after tracing how semiotic theory, as conceived in interface studies, developed as a way to avoid the messiness of language, I argue it propagates a simplistic view of communication merely as a process of using sign systems to encode and decode meaning. Subsequently, I develop an alternative conception of meaning-making in interfaces that combines rhetorical and hermeneutic theories of invention and interpretation to articulate a theory of interfaces as sites of participatory collaboration. This view asks designers and researchers to reconsider how they see their relationships with users and advises a questioning and listening approach in UX studies.

> *Qui non intelligit res, non potest ex verbis sensum elicere.*/Those who don't understand *things* can't elicit sense from *words*.
>
>   *– Martin Luther (as cited by Gadamer, 2004, p. 173, emphasis added)*

> Users spend most of their time on other sites. This means that users prefer your site to work the same way as all the other sites they already know.
>
>   *– Jon Yablonski, Jakob's Law.*

The polymorphous nature of graphical interfaces presents problems for both designers and users. Where text, color, typography, images, videos, animations, and icons come together, their various communicative systems bunch and overlap in complicated ways. Occasionally with great effort, an interface can recede almost entirely from view; more often, interfaces present users with interpretive problems stemming from their design—*What does this symbol mean? How does this process work? What does this button* actually *do?* For researchers, the problems are acute. Faced with the formidable task of describing, modeling, and making predictions, scholars over the past three decades have turned to a wide variety of theories to explain observational data and guide their research. It can be difficult to know which questions to pursue, given the abundance of theoretical models,

and it can be difficult to resolve incommensurability between theories that subvert and contradict one another. In a recent collection, for example, Ehren Pflugfelder (2017) identifies "a few dozen methods" and describes "a maze of options" (p. 168). Evolving from its earliest days as a body of largely prescriptive aphorisms and a list of dos and don'ts (de Souza, 1993), UX research has branched out in almost as many directions as there are researchers. Some evaluate neural activity and biometrics using methods developed in the natural sciences, some conduct standardized assessments (using tools such as the SUQ and PSSUQ) and apply statistical methods, and some analyze emotional states using ethnographic and other more qualitative methods (Skorin-Kapov et al., 2014). Some are testing how many milliseconds it takes to locate and click a button, others are measuring what effect clicking it has on heart rate and brain activity, and still others are asking the users how clicking a button makes them *feel*. Like interfaces themselves, interface studies are polymorphous.

While there are certainly strengths to this polymorphism, one of the most important issues we face, consequentially, is the need for a coherent body of theory to better integrate these different methods and support more systematic inquiry. Certainly, there have been prior attempts to formulate such a unifying theory—one of which, semiotics, serves as my foil for this chapter—however, it turns out that adequately theorizing the design and evaluation of user interfaces is quite complicated. As an exercise, let's imagine what might comprise such a theory. Given the field's history, the theory would likely need to retain its interdisciplinary heritage and remain a patchwork but must somehow coherently represent the uniquely dense and varied nature of interfaces as well as account for both their creation and their interpretation—in other words, it must explain how such complicated, multimodal "texts" are created and used as well as the affective, cognitive processes involved in both their production *and* their interpretation. That's already a lot to do, considering how complicated subjects of cognition, memory, and behavior are. Additionally, and in keeping with a tradition we've found indispensable, this theory should be amenable to experimentation and, ideally, predictive of observable phenomena. It would need a clearly defined terminology coherent enough to retain explanatory power across disciplines, yet flexible enough to be relevant in domains such as business, marketing, and other industries. Finally, it would need to address the ethical dimensions of interface design: how interfaces relate people to one another socially and economically, for example. This is a big job and even sketching a general outline, admittedly incomplete as this, is daunting. Interface studies seems to impinge on every sphere of human endeavor.

Obviously, fully developing such a unifying theory is more than I can accomplish here, so I'll focus instead on a single, longstanding question that illustrates why previous attempts at formulating a unifying theory have failed and what such a theory must look like to succeed. By focusing on one significant issue (the interpretation question), and the field's primary response to it (semiotic theory),

I hope to show the relationship to rigor and science that any potential unifying theory must establish if it is to actually unify the various aspects of the field in tension. The question of interpretation has long preoccupied UX researchers and has been posed and addressed in various ways over the years. Fundamentally it's about how meaning gets made in interfaces. How do designers imbue a largely arbitrary collection of signs, images, colors, shapes, and microcopy with enough meaning for users to perform extremely complex tasks, such as creating virtual imagery, trading stock portfolios, or maintaining very large databases, using them? How do people elicit enough meaning from often ambiguous visual systems to still make reliable decisions? Where does the meaning of design elements such as lines, colors, icons, or emojis come from? How is it produced or assigned? Perhaps most importantly, why does it go wrong? These and others are all variations of the interpretation question which boils down to the need for a theory to describe the process of making meaning from signs.

Aside from being a longstanding issue, the interpretation question is pertinent for other reasons. It encompasses both halves of UX studies—design and research/testing, which are increasingly in tension—and comprises the place where they both overlap. Interpretation is a critical concept for both subdisciplines because it's instrumental to both. UX designers must know to some extent how their designs will be interpreted and UX researchers must know to some extent how the users interpreted and failed to interpret the interface. Interface interpretation is the central process that UX is concerned with, no matter the specialization. The act of interpretation is when designers, all different kinds of users, researchers, and even nonhumans, must come to agreement about what things mean, about how things are—at least, if the communication is to be successful.

This question is also pertinent because for decades the main response to the call for a unifying theory of UX, which was semiotics, was claimed by proponents to offer a science of interpretation. Members of more scientific disciplines can become frustrated with the messiness, the illogic, that is seemingly endemic to interface design. As Mihai Nadin (1988) tellingly asks, why can't interface design be "more like science" and why can't interface designers "be more like engineers?" (p. 272). If semiotics attempts to brings the rigor of science to the messiness of design, the prevailing theory of interpretation in UX likewise harkens to a mathematical theory of communication that seeks to reduce communicants to senders and receivers, and messages to signal and noise. In this model, the process of design and interpretation is a process in which designers encode meaning into interfaces using signs and later, users decode them, reassembling the message by associating the signs with their intended meanings. In providing the rhetorical-hermeneutic response to the question of interpretation, my argument not only refutes semiotics as the science of language, but it also likewise and by the same token discredits a mathematical model of communication that has proven inadequate for understanding how designers create and users engage with interfaces.

After dispensing with some definitional issues, this chapter examines the question of interpretation as it's been framed, illustrating its complications with examples of interface elements, and establishing a vocabulary for discussing interface artifacts. The main body of the chapter provides a substantial critique of the most significant candidate for a unifying theory, namely semiotics, and proposes an alternative one grounded in rhetorical hermeneutics, showing how it better explains the way designers create and users make sense of interfaces. Drawing on Gadamerian philology and tracing its roots to the rhetorical concept of *technē*, the chapter argues that the most productive view of interfaces is not one of systems of signs and symbols where meaning must be encoded by designers and decoded by users, but instead a view that sees interfaces as part of a living language whose terms are in constant flux and whose creation and interpretation requires authentic dialogue between parties, dialogue that is generative, rather than representative, of meaning. Furthermore, rather than being stubbornly illogical, merely flawed conduits of meaning, interfaces are instead sites of profound and extensive collaboration where humans and nonhumans, despite barriers, come together to communicate with one another, to act and to change. Ultimately, I envision this collaboration as a kind of hermeneutic friendship informed by rhetorical prudence, and I discuss the implications of this view for UX design, pedagogy, and research.

■ Defining User Experiences and User Interfaces

According to the International Organization for Standardization (ISO, 2019), user experience is defined as the "perceptions and responses that result from the use and/or anticipated use of a system, product or service" (3.15). The definition states, "this includes the users' emotions, beliefs, preferences, perceptions, comfort, behaviours, and accomplishments that occur before, during and after use" and goes on to explain:

> [user experience] is a consequence of brand image, presentation, functionality, system performance, interactive behaviour, and assistive capabilities of a system, product or service. It also results from the user's internal and physical state resulting from prior experiences, attitudes, skills, abilities and personality; and from the context of use. (3.15).

So, according to this, user experience is the sum of one's "perceptions and responses" broadly conceived, encompassing what happened before, during, and after use, and is the result of a varied set of concerns at least some of which (such as "internal and physical state") are entirely outside the control of designers and even users themselves. Given this definition, how could one ensure a good user experience? Designers would need divine knowledge of individuals and an omnipotent control over things well outside the scope of a given project. Rather than

this laundry list of a definition which apparently excludes nothing, we could use some more practice-oriented language.

Marc Hassenzahl (2008), arguing against a prior version of the same standard, provides just such a definition, one that, he claims, "shifts attention from the product and materials . . . to humans and feelings" (p. 12). The shift to humans and feelings is productive for three main reasons: it emphasizes the dynamic and temporal dimensions of interactions (now incorporated into the current version of the standard, but not present then); it provides a primary object of analysis: the "stream of passing momentary feelings" (Hassenzahl, 2008, p. 12); finally, it includes a way to talk about and test a class of phenomena difficult to pin down. Hassenzahl calls this the question of "how UX is 'made'" (2008, p. 12). Building on the ideas that "experience itself is an ongoing reflection on events . . . a constant stream of self-talk" (Hassenzahl, 2008, p. 11) which always includes "a momentary feeling of pleasure and pain in various intensities" and which "regulates our behavior" (p. 12) and the fact that, in an ongoing experience, we always have access to a sense of whether we feel good or bad at any particular moment, Hassenzahl ultimately defines user experience as "a momentary, primarily evaluative feeling (good-bad) while interacting with a product or service" (p. 12). This definition, while much shorter and more direct than the ISO standard, also has the advantage of telling us what user experience actually is: an evaluative mode of thinking.

However, this definition is incomplete (as Hassenzahl himself acknowledges) because it doesn't address the "critical question of how UX is 'made'" (2008, p. 12). Hassenzahl proposes a corollary, that "Good UX is the consequence of fulfilling the human needs," which he categorizes into autonomy, competency, stimulation, relatedness, and popularity (2008, p. 12). While we may quibble over this taxonomy (and as we've seen, subsequent standards revisions have chosen a different one), we can't argue with the experimental results which support his hypothesis (Hassenzahl, 2008) and in any case, our interest is not with experiences in general but with one kind of experience specifically: the graphical interface. We can extrapolate enough from Hassenzahl that users are constantly making judgements about how interface elements make them feel, and that, in principle anyway, an interface succeeds at creating a positive user experience when it fulfills some set of human needs, however they are defined.

Similarly, the ISO defines a user interface as "all components of an interactive system (software or hardware) that provide information and controls for the user to accomplish specific tasks" (2019, p. 1) sweeping in "all components" providing "information and controls," and coupling them with the ability to "accomplish specific tasks" and doing little else. Like the previous standard, it's vague enough that nearly anything could fit. According to this definition, I could use a hammer to interface with a house, and therefore it misses the opportunity to identify the characteristic most salient to interfaces of all kinds: their primarily linguistic composition. All the various elements of an interface, the buttons and switches, the menus, even the colors and arrangements—the things that actually "provide the information

and controls"—all share one common purpose: to enable communication, and they do this primarily by communicating their intent through their representation—in other words, their function is represented by their appearance. While not every component of an interface is linguistic in nature, the interface as a whole is a linguistic composition because it is comprised of various elements whose arrangement and combination allow it to be used for communication.

This linguistic composition is what distinguishes interfaces from common tools. I do not mean to restrict the term "linguistic" only to the alphabetic kind, the language used verbally and in writing, but instead to include all forms of language, including the visual and the gestural. As the father of modern hermeneutics, Hans Georg Gadamer (2004) writes, "Being which can be understood is language" (p. 470). In this view, because being can only make itself understood through language, being itself is language. So, the hammer doesn't interface with the house, but in the subtly beckoning curve of the handle we do find an interface because it is communicating with us. A person, the designer, communicates through a kind of gestural language to another person, the user, to seemingly say: "grasp me here and swing me so this other place strikes." The hammer can't interface with a house, but a human can interface with either a hammer or a house by way of the language of affordance. This language of affordance is still nevertheless language, even though it utters not a word, and in the same way shapes, colors, textures, space, sounds, and other media are also language, albeit nonverbal.

So, we must revise the standards definition to be more specific. We should define a user interface as consisting of the linguistic components of an interactive system that enable human and nonhuman communication. This definition more finely distinguishes not only the character of interfaces but also the specific uses to which they are put. It's not just any components, but the linguistic ones, and not just any tasks, but communicative ones. This allows us to discriminate between interfaces and common tools, for example. Even more usefully, this definition also makes available what we might call the "stuff" of interfaces, that is, what they are made of. However, some examples are needed before we can explore this more fully.

■ Multimedia and Intermedia Composition

Figure 13.1 shows interface elements one might find on a number of websites: a hyperlink, a pause button, a dropdown, and so on. By contrast, Figure 13.2 shows a children's music-making app ("Bandimals"). Aside from the first being a collection of generic elements and the second being a finished commercial app, or the first containing mainly website elements while the second contains mainly mobile ones, or that the audience for the first is primarily adults and the audience for the second is mainly children; or that the first is monochromatic and the second uses color, or any number of other surface differences we might mention, these contrasting examples nevertheless illustrate several characteristics inherent to and common among graphical user interfaces as a class.
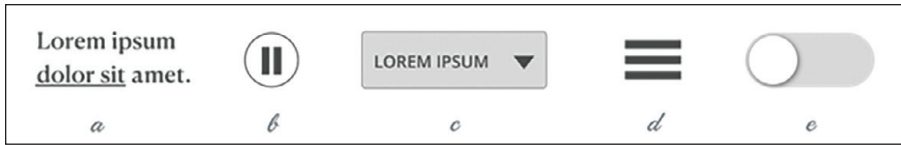
Figure 13.1. Generic interface elements a. hyperlink; b.
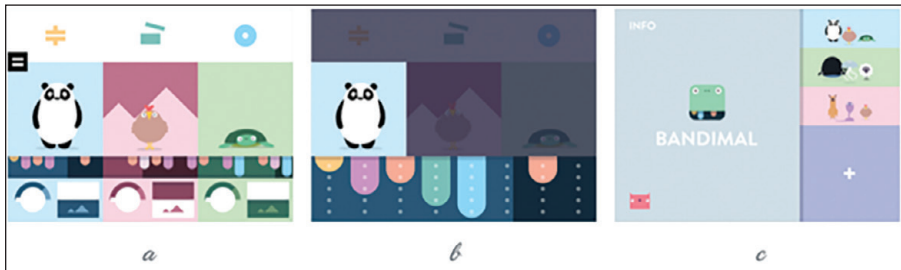*pause button; c. dropdown; d. menu; e. switch.*

Figure 13.2. Screenshots from the "Bandimals" app a. Home; b. Play; c. Create New.

In Figure 13.1c, a textual element i.e., the lorem ipsum, (one medium), appears alongside graphical elements, a rectangle, and a triangle (another medium). In Figure 13.2, in the fully developed app, this is even more apparent as the images, colors, arrangements, icons, motions, and actions all exist together in juxtaposition on the screen. Not only do the elements that comprise interfaces exist as multimedia, which is to say they are made up of different media, but they are also intermedial, meaning part of them exists between different media, as more than the sum of the different parts. The interface of a mobile app will adapt when viewed on a larger display and so is intermedial in this way, and each element is also intermedial in its local context. For example, the icon representing the main menu in Figure 13.2a is also a button that, when pressed, slides down a portion of the screen to reveal additional options. The element is both an icon and part of an animation. To understand it only as an icon is distorting, to say nothing of the sounds that become music when icons are tapped in sequence. Even the relatively simplistic elements in Figure 13.1 are intermedial. Each figure is part of a composite whose elements work between and among different media. All interfaces consist of elements in multiple media and all interface elements exist at least partially between media, as well.

Because graphical user interfaces have this composition, we cannot read an interface as we would read a text, experience it like an animation, look at it like a photograph, or watch it like a video, even though an interface may include all these things. Instead, it is more. And this brings us to another point about these examples, one that has more direct bearing on our discussion: the question of representation. Readers may notice that the elements in Figure 13.1 are

significantly more familiar, perhaps one might say more standard, than the equivalent elements in Figure 13.2. While there isn't a one-to-one correspondence between subfigures, 13.1a roughly corresponds with the word "INFO" in 13.2c, as both are hyperlinked text, and 13.1d corresponds roughly with the small black square in 13.2a, as both are menu icons, and comparing them highlights the originality of the latter. Also, there are additional nonstandard icons in Figure 13.2 such as the "play," "save," and "record" buttons in the top panel and the volume and image controls in the bottom panel of 13.2a, the dots and highlights panel in 13.2b, and all but the plus sign and grid arrangement in 13.2c. But—and I know this is wholly anecdotal—despite this nonstandard iconography, my eleven-year-old daughter used the app without issue whereas I struggled to make sense of it. Our theory must do something to address this additional curiosity. How can some users know what these seemingly arbitrary signs and arrangements mean, while others can be mystified? Why would an adult with expertise in interfaces be worse at reading one than a child?

■ Semiotic Theory in UX Research

Interface studies scholars have advanced several candidates for an overarching theory of UX, the most important of which is semiotics. However, it's important to note that semiotic theory in interface studies as described here is not the same kind of social semiotics Gunther Kress and Theo van Leeuwen (2021) memorably figure as a "semiotic landscape" (p. 9)—something at once both natural and shaped. Prior to that, Ben Barton and Marthalee Barton (1987) had presented a balanced analysis of the semiotic approach as part of their study of simplicity in design. Drawing on visual rhetoric, they noted problems "when a visual representation may be invested with multiple meanings," and called it "a semantic incompatibility" (1987, p. 19), but neither could they completely accept a definition of graphics purely as a "monosemic (unique-meaning) system" (p. 14), and with inimitable style conclude that it's never practical to insist on purity and that design is a process of making compromises (1987). In the decades since, technical communication scholars have tended toward a polysemic (multiple-meanings) view of language and visuals congruent with the core idea that "reality is actively constructed rather than passively reflected in signs" (Yu, 2023, p. 321). By contrast, the kind of semiotic theory I outline in this section belongs to the other tradition in which signs passively reflect reality, instead of constructing it, and where the ideal is that each sign should mean one and only one thing.

    At first, there may be some points to recommend a monosemic view. Semiotic theory was already well established by the mid-1980s when user interfaces were first garnering scholarly attention in the engineering community. Arising out of the work of linguist Ferdinand de Saussure and logician Charles Sanders Peirce and later updated by, among many others, author and critic Umberto Eco, the theory of semiotics is systematically applied to interface studies by Nadin (1988),

augmented by Clarisse de Souza (1993), and taken up by a welter of scholars in the 2000s. Semiotic approaches to interface design continue to the present day with Muhammad Islam and Harry Bouwman (2016), Daniela Fogli (2017), and Vito Roberto and Elio Toppano (2019). Semiotic theory may be appealing largely because it purports to be the science of language. Through extensive categorization, it seeks to make language as predictable as mathematics (see Nadin, 1988, de Souza 1993, and Islam & Bouwman, 2016 for examples). Perhaps most importantly, semiotic theory appears to answer two questions which the "computer community" found to be critical: as Nadin (1988) frames them: "(1) Why isn't the design of computer interfaces more like science? and (2) Why can't the people who design interfaces be more like engineers?" (p. 272). As a purported science of language, semiotics seems to offer the computer community a way out of problems posed by the messiness of design.

In the computer community, proponents of semiotic theory have made some extravagant claims that haven't exactly been borne out by the research. Nadin (1988) writes, "If there is a science of interface (computer interface or any other kind), then this science is semiotics, and the pan-logical semiotics established by Peirce seems appropriate to interfaces. Once they accept this affirmation, computer scientists and engineers should have no problem . . ." (p. 273). In a similar vein, de Souza (1993) writes "if designers are led to conceive of systems [*i.e.,* interfaces] as a distinctive type of message they are sending to users, an engineered metacommunication artifact, many of the misunderstandings and deadlocks possibly occurring in human-computer interaction can be avoided" (p. 754). However, empirical research since then has belied such hopes and shown semiotics are not panacea. In their analysis of induction-based research methods in which general rules are inferred from specific data, Paul van Schaik and colleagues (2012) find significant problems with a model in which designers are senders and users are receivers of information and in which, as Nadin (1988) puts it "once the user accepts a language, he will apply it according to the rules the designer embedded in the interface, and their communication, mediated by a certain machine, will take place" (p. 274). According to this view, once users decode the meaning that designers have encoded, everything works smoothly.

To the contrary, these authors cite "a wealth of empirical evidence" suggesting that, "rather than doing complex (weighted and summed) calculations to induce, people use relatively simple cognitive strategies" such as "simple rules" and "heuristics" (van Schaik et al, 2012, p. 11:2). The lengthy process of building up a mental model of the language of a given system of signs does not appear to be in operation. Instead, people form judgments much more quickly. Neglect of this fact, the authors argue, "can easily lead to false conclusions" and "spurious" effects. Instead, the authors explain, "'beauty' should be thought of as an affect-driven, evaluative response to the visual Gestalt of an interactive product," which, because of "its predominantly affective nature makes it very quick" (p. 11:4). Instead of calculating beauty, people feel it; instead of formulating logical

rules, people intuit them. Ultimately, the authors contend, in absence of a sufficient understanding of how such inference works, "the theoretical justification of a model is almost impossible" (p. 11:3). Likewise, reporting on the results of empirical study, Islam and Bouwman (2016) conclude that "user interpretation . . . is nearly impossible to predict based on the meaning of the sign or . . . the sign itself" (p. 134). Aside from these decidedly unfavorable results, research based in semiotics has some benefits. For example, Islam and Bouwman (2016) give us the useful concept of the "interface sign" (p. 122), and de Souza (2005) begins to move the field beyond a theory of signs with her discussion of the ontological and epistemological dimensions (p. 337-338) of interfaces.

■ Interface Signs and Symbols

To move beyond a theory of signs, we must recognize that the inability of a linguistic theory to predict human behavior is not indicative of a limitation of the theoretical model, but instead reveals a characteristic inherent to all linguistic systems. I'm tempted to crack the old programmer's joke, "it's not a bug, it's a feature," because, as we've seen from our survey, linguistic systems are more unpredictable than they ought to be. Language, despite the imposition of scientific methods and taxonomy, remains stubbornly intractable, difficult to pin down, liable to slip away leaving the researcher holding vapor. This ungraspable quality to language has been noted by some of the most prominent thinkers in the Western tradition and it ultimately leads us to inquire into the nature of thinking itself. So, we begin on the ground de Souza approaches in her later work: the ground of ontology, specifically, the ontology of signs and symbols.

Gadamer is perhaps, alongside Paul Ricouer, Jurgen Habermas, Gianni Vattimo and a handful of others, the most significant figure of twentieth century hermeneutics. His encyclopedic *Truth and Method* was first translated into English in the late 1970s and only became widely available in 1989. As a result, it probably wouldn't have enjoyed as much currency as semiotic theory did for scholars like Nadin and de Souza; nevertheless, the hermeneutics developed by John Dewey, Wilhelm Dilthey and Friedrich Schliermacher and revolutionized by Gadamer were engaged in a similar project to semiotics to bring to the humanities the rigor enjoyed by mathematics and the sciences. Gadamer's differed radically, however, from other attempts to systematize human language. Whereas Peirce's semiotics, Gottfried Leibniz's *characteristica universalis*, John Wilkins' "Real Character," Cartesian rationality, etc. all seek to impose scientific methods onto human language, Gadamer's hermeneutics explicitly rejects such imposition. It identifies a fundamental feature of language, its speculative nature, that makes such scientific surety impossible. However, fully understanding this difficult-to-grasp characteristic of language requires us to first establish some key concepts such as the ontological differences among signs, symbols, and works of art, the structure of the hermeneutic circle, and centrality of language itself to being.

Gadamer (2004) describes signs and symbols as "the two extremes of repre-sentation" (p. 145). At one end of the spectrum is "pure indication which is the essence of the sign" and at the other, "pure substitution which is the essence of the symbol" (p. 145). Indication and substitution can be present in mixed amounts so that a particular composition consists of greater and lesser amounts of each. At one end, "a sign," Gadamer writes "is nothing but what its function requires; and that is to point away from itself. To fulfill this function, of course, it must first draw attention to itself. It must be striking: that is, it must clearly foreground itself and present itself as an indicator," however, Gadamer is careful to point out, it cannot be *too* striking or cause readers to linger over its beauty "for it is there only to make present something that is absent and to do so in such a way that the absent thing, and that alone, comes to mind" (2004, p. 145). The same is true of all signs, Gadamer tell us, "There is something schematic and abstract about them, because they point not to themselves but to what is not present" (2004, p. 146). The examples in Figure 13.1 exhibit this schematic or abstract character—they are like diagrams of art, proto-figures, skeletons, or scaffolds that have preserved the function of the visual but lack its full aesthetic.

Figure 13.3. Several common symbols of trust. a. McAfee; b. PayPal; c. TRUSTe; d. Better Business Bureau.

Symbols, however, are not merely signs, but also something more. Instead of merely pointing to something that is not present, a symbol also makes present the thing it points to by standing in for it, by representing it. Gadamer writes a "symbol not only points to something; it represents it by taking its place. But to take the place of something means to make something present that is not pres-ent" (2004, p. 147). Each of the examples in Figure 13.1, is mere sign pointing to what is not present: the underscore points to a hyperlinked resource; the down-ward caret points to a list that is not yet visible, and likewise for the menu icon. The pause button and toggle switches both point to and recall physical objects which perform analogous functions. However, the examples in Figure 13.3 are not only signs, but also symbols of various kinds of trust. These trust symbols, often appearing on webpages in the header or footer, on payment forms, and alongside payment buttons, serve a different purpose. Rather than signaling that something is not present, they instead symbolize something that is present, in this case trust, verification, accreditation, and so forth.

Normally, signs and symbols are given their meaning through an act Ga-damer (2004) calls "institution." He writes: "Artificial signs and symbols alike do not . . . acquire their signifying function from their own content but must be

taken as signs or as symbols. We call the origin of their signifying function their 'institution'" (2004, p. 148). The examples in Figure 13.3 have such an institution. When the Better Business Bureau unveils their trust badge, it becomes imbued with meaning: thereafter it represents the accreditation of the body. However, the same is not true of the examples in Figure 13.1. The venerable underscore has signified a hyperlink since the first days of the internet, however not all hyperlinks are indicated by underscores, so what of those that use different colors or typography? From where does that meaning stem? While a downward-pointing caret may carry meaning from other systems, where does the meaning of the menu icon come from? Whoever first used it didn't institute it in the sense that a Department of Transportation decrees what traffic signs means. Instead, as Gadamer writes of works of art (as opposed to signs and symbols): "The public act of consecration or unveiling that assigns its purpose does not give it its significance. Rather, it is already a structure with a signifying function of its own, as a pictorial or non-pictorial representation, before it is assigned a function" (2004, p. 147). Works of art are functionally and structurally different from both signs and symbols and this is what gives them additional dimensions of meaning.

The difference between signs and symbols on the one hand and works of art on the other stems from their relationship with things that are not present. While a sign or a symbol may be instituted with meaning, a work of art already carries its own system of meaning to which its parts are arranged in relation. Thus, Gadamer distinguishes between those signs and symbols which merely carry meaning and artistic elements "whose own content points beyond them to the whole of a context determined by them" (2004, p. 149). It is no coincidence that the example Gadamer chooses to illustrate is the art of architecture. Architecture, Gadamer explains, both responds to the space around it and structures the space within it, a process he calls a "twofold mediation . . . [which is] namely to draw the viewer's attention to itself, to satisfy his taste, and then to redirect it away from itself to the greater whole of the life context which it accompanies. As the art which creates space," Gadamer tells us, architecture "both shapes it and leaves it free" (2004, p. 150). Interfaces are a lot more than a collection of signs and symbols. Although made up of signs and symbols, interfaces also structure space and, through the structure of this space, provide structure for the content that resides within it. Interfaces are more akin to the art of architecture than they are to a system of signs and symbols, and so in this dimension alone, semiotic theory, which stops at signs and symbols, fails to account for what we observe.

∎ The Speculative Structure of Language

However, the problem with a narrowly construed semiotic theory is not merely that it misclassifies interfaces as signs when they should actually be seen as a specific type of architecture; there is a more fundamental misapprehension yet that, once revealed, does away altogether with any ideas about a science or mathematics

of language. Gadamer explicitly rejects the notion of "a pregiven system of possibilities of being for which the signifying subject selects corresponding signs;" he writes: "a word is not a sign that one selects, nor is it a sign that one makes or gives to another; it is not an existent thing that one picks up and gives an ideality of meaning in order to make another being visible through it" (2004, p. 417). Language cannot be reduced to a mere system of signs because it carries within itself generative power. There is a paradox in language that cannot be explained away or avoided, represented by what Gadamer calls "the speculative structure of language" which involves achieving a "speculative unity" (2004, p. 470). On the meaning of the word "speculative" Gadamer writes he uses it in its common sense as well as how it was used by eighteenth-century philosophers, having the nature of being reflected (from the Latin *speculum*, or mirror). This dual meaning is no coincidence. As Gadamer writes of moments like this: "one must always count on finding the technical and the freer use of a word juxtaposed" (2004, p. 415). The multiple meanings of "speculative" point precisely to the generative power of language Gadamer is trying to explicate and for which the word "speculative" stands as synecdoche.

In Dawn Opal and Jacqueline Rhodes's (2018) discussion of how user-centered design has become "intertwined" (p. 71) with rhetoric and composition studies, the authors draw on the idea of *speculative design*, that is, a design concept that calls for exploring "alternative, fictional scenarios [and] asking what-if questions" engaging in "a form of play" that "invites makers to make-believe" (p. 77). So, language is speculative in this sense, as way to pursue creativity through play, but it is the relationship between speculation and reflections or mirrors which we must examine more closely. The metaphor of a reflection in a mirror is useful in understanding what it means for words to have "speculative unity" (Gadamer, 2004, p. 470). Imagine a mirror with a candle in front of it. There two candles, the original, what we might call the real, and its reflection, which is like a copy. But, unlike a true copy or duplication, this reflected candle doesn't exist except as a reflection, whereas a real copy of the candle would exist on its own. But for our reflected candle, if the original is taken away, the reflection ceases to exist; by the same token the reflected candle is only lighted if the original candle is lighted, and so on for every trait. Unlike a copy or duplicate, the reflected candle is bound to the original in this way. Gadamer, following Hegel, assigns the original and the copy-as-reflected a sense of belonging-together. As Gadamerian scholar Kathleen Wright (1986) puts it: "what is at issue (*die Sache*) and its meaning as expressed and reflected in language seem to be two and distinct. Nonetheless insofar as the meaning of what is at issue appears only as expressed and reflected in language, they belong together" (p. 207). Like the candle reflected in the mirror, the meaning of a word only has its existence in relation to the word itself. The word and its meaning are bound together like a candle and its reflection.

This is what Gadamer means when he writes: "everything that is language has a speculative unity: it contains a distinction, that between its being and the

way that it presents itself, but this is a distinction that is not really a distinction at all" (p. 470). The reflected candle is a separate candle in the sense that it is not the original, but it is not different enough that the original could be lighted and the reflected one not, or the original be broken and not the reflection. This speculative unity, this distinction without a distinction, has the quality Wright calls "double-directionality" (Wright, 1986 , p. 207). According to Wright, there are two directions: from the object into the mirror and from the reflected object in the mirror back out into the world. While the object in the mirror remains the same as a result of its being a reflection, the original object gains something beyond itself: it is now the original candle instead of just a candle, even though it only gains this additional meaning as a result of its appearing in the mirror. While this analogy is simplistic, it illustrates how representation in language is generative: more is made than what is provided; meanings multiply. Originals take on reflections and in so doing, gain identities.

Language is generative in another way as well and grasping this also means solving what Gadamer calls "the great dialectical puzzle of the one and the many which fascinated Plato as the negation of the *logos*" (2004, p. 453). As we've seen, an object and its reflection in language have a paradoxical kind of being, that of quasi-duality, and this gives rise to the generative aspect of language, to its multiplicity. Gadamer accuses Plato of turning away from the puzzle, of taking "only the first step." Gadamer writes:

> For there is another dialectic of the word which accords to every word an inner dimension of multiplication: every word breaks forth as if from a center and is related to a whole, through which alone it is a word. Every word causes the whole of the language to which it belongs to resonate and the whole world-view that underlies it to appear. Thus every word, as the event of a moment, carries with it the unsaid, to which it is related by responding and summoning. The occasionality of human speech is not a casual imperfection of its expressive power; it is, rather, the logical expression of the living virtuality of speech that brings a totality of meaning into play, without being able to express it totally. (2004, p. 453)

In this passage, Gadamer elegantly expresses a number of relationships: a new definition of dialectic (different from Plato's, Aristotle's, or Hegel's), the concept of language as a center and its momentary, occasional quality, the concept of the unsaid and the fundamentally revolutionary idea that it is the unsaid in language that makes it infinite. Gadamer reminds us that, while words may represent things, they may also fail to represent things, or represent them only partially or be used to represent other things because of a perceived similarity. They can be used metaphorically, ironically, sarcastically, iconoclastically. Language in use happens this way: roughly, playfully, with terms pressed to serve purposes for which they weren't intended.

Observing that "in verbal consciousness there is no explicit reflection on what is common to different things," and there is a "widening experience, which looks for similarities, whether in the appearance of things or in their significance for us," Gadamer ultimately argues that "The genius of verbal consciousness consists in being able to express these similarities. This is its fundamental metaphorical nature, and it is important to see that to regard the metaphorical use of a word as not its real sense is the prejudice of a theory of logic that is alien to language" (2004, p. 428). In other words, to condemn language for not being logical is to criticize it on the grounds of logic, not on language's own ground which affirmatively includes the ability to be used in a sense outside of or even contrary to its meaning. For this most important reason, an interface is not a collection nor a system of signs because it is part of a living language in which individual terms are not only representative of meaning but also themselves generative of meaning. Just as a word may resonate with the unsaid to produce heretofore unindicated meaning, so too might an interface sign resonate with the totality of other signs to produce additional meanings.

Because language has this property allowing "an infinity of meaning to be represented within it in a finite way" (2004, p. 461), it has significant implications for the act of understanding. A hermeneutic experience, Gadamer tells us, has "its own rigor." This is because a thing can only present itself to the hermeneutic experience with a special effort: that of "being negative toward itself" (2004, p. 461), so that an interpreter must constantly keep at arm's length countless incorrect interpretations, everything that is not the meaning suggested by the text itself. This constantly unfolding process of interpretation, Gadamer tells us, takes the form of a series of conjectures. He writes, "explicating the whole of meaning towards which understanding is directed forces us to make interpretive conjectures and to take them back again" and that this "self-cancellation of the interpretation makes it possible for the thing itself—the meaning of the text—to assert itself" (2004, p. 461). Thus, the infinity constantly suggested by language is accounted for in the interpretive act, winnowed away by a process of conjecture so that only what is common remains. In order for this commonality to become apparent, to enjoy a hermeneutic experience, the rigor that Gadamer writes is required is an "uninterrupted listening" (2004, p. 461). It is within this listening, which cannot be interrupted because it is an active kind of listening, that hermeneutic experiences exist. Active listening, or what rhetoricians have called "rhetorical listening" strongly implies collaboration.

▮ Rhetorical Technē and Cunning Intelligence

Once we've given the hermeneutic response to a unified theory for interface design and evaluation, our burden remains incomplete. We've shown that a scientific, mathematical understanding of interface languages will always elude our grasp because interface signs are not merely signs but living nodes in a network

of conversation that is always reflecting, always changing and being changed. But we've yet to explain what we ought to do as a result. Do we throw up our hands, saying "language is paradox" and just put pseudo-random signs into place as we go? Do we cease evaluating interfaces or putting consideration into our designs because we cannot say with mathematical certainty how they will be received? Of course not, and so we must turn away now from theories of interpretation and toward a theory of production: specifically, to the rhetorical concept of *technē*. Rhetorical *technai* (plural of *technē*), such as the core process of conjecture outlined below, provide us precisely the explicitly unscientific methods that should guide the production of interfaces. While hermeneutics gives us a way to understand the analysis of communication, rhetoric is more suited to describe the production of texts. The concept they have in common is conjecture. The act of conjecture is essential, as we've seen, to an authentic interpretive experience, but as a rhetorical *technē*, the concept of conjecture is also essential to the process of invention.

More than simply being one of the "states" Aristotle laid out in *Nichomachean Ethics* "by virtue of which the soul possesses knowledge" (Barnes, 1989, p. 1799), rhetorical *technē* has a rich history covering more than two millennia. One prominent scholar of this ancient tradition, Janet Atwill (1998), attempts to reach beyond Aristotle to recover what she argues is a "neglected tradition of rhetoric embodied . . . in Protagoras' political *technē* and Isocrates' *logon technē* and preserved, in somewhat modified form in Aristotle's *Rhetoric*" (p. 1). For Atwill:

> a *technē* is never a static normative body of knowledge. It may be described as a *dynamis* (or power), transferrable guides and strategies, a cunningly conceived plan—even trick or trap. This knowledge is stable enough to be taught and transferred but flexible enough to be adapted to particular situations and purposes. (1998, p. 48)

We see here how language in general and interface language in particular seems to operate like a *technē*. It is dynamic and resists normative imposition yet remains stable enough to be grasped. It can, and indeed must, be adapted to different purposes and in different circumstances. Like interpretation of the word, Atwill writes how "*technē* is never reducible to an instrument or a means to an end. Instead, art intervenes when a boundary or limitation is recognized, and it creates a path that both transgresses and redefines the boundary" (1998, p. 48). Thus, not only is it a mistake to think that the interpretation of interfaces could be subjected to science, but it is also a mistake by the same token to subject the creation of interfaces to science. The state of *technē* is by its nature transgressive of boundaries, its function to escape limitations, to defy easy categorization, and, most importantly, it "creates a path," or, alternatively, shows the way.

Atwill's *technē* is animated by the particular kind of thinking the ancients called *mêtis*, or cunning intelligence. *Mêtis* operates in domains where the weaker must overcome the stronger, where time and terrain are always shifting, where forms are hard to identify and fix, and where surface appearing stands opposed to

true nature. In the deceptive world of *mêtis*, only a cunning mind has the tricks necessary to master the always-changing moment. Atwill writes, "the significance of *technē* often lies in the power of transformation *mêtis* provides" (1998, p. 56) and she goes on to chart several connections between the kind of intelligence denoted by *mêtis* and the kind that leads to the development of *technai*. In argumentation, one such process is known as conjecture, and it has its etymological roots in celestial navigation and the plotting of a journey by the stars. Like *technē*, it "creates a path." The ability to reason by conjecture plots its course by mapping like and unlike things. It's worth mentioning that one of the primary synonyms listed in most thesauri for "speculate" is "conjecture": the same reasoning by analogy we've seen in speculative thinking.

Aristotle recovers a form of this intelligence with the theory of prudence elucidated in *Nichomachean Ethics* and rehabilitates the kinds of knowledge that "are subject to contingency and directed towards beings affected by change" (Barnes, 1984, p. 316), calling this *phronesis*. These kinds of knowledge are employed by the prudent one, the one who possesses *phronesis*, as Aristotle writes "whose actions are oriented towards an end and who must always appreciate the importance of opportunity and understand that he is operating in a domain in which there is no stability" (Barnes, 1984, p. 316). Nevertheless, Aristotle is at pains to distinguish *phronesis* from mere cunning, writing: "[it] is more than mere intuition; it is a type of skill founded upon 'deliberation aimed at a good result' (*euboulia*), which is different from the ability 'to do things with a particular aim in view'" (Barnes, 1984, p. 317). For Aristotle, what distinguishes the two is their ends: *phronesis*, or prudence is cunning aimed a good result.

In either case, the person with *phronesis* operates by and through a process based on conjecture. The *phronimos* "can only reach his goal if he conjectures . . . his route with the aid of the signs that his flexible intelligence enables him to recognize, compare and use to the full" (Barnes, 1984, p. 313). Thus, cunning intelligence enables the prudent one to "recognize, compare and use" signs, and it enables the prudent one to do so very rapidly. As linguistic scholars Marcel Detienne and Jean-Pierre Vernant write, this "intelligence that is at work in action," this "indirect and groping knowledge," is also what allows the *phronimos* to excel in "in forming the best opinion thanks to the most rapid reflection" (1978, p. 313). This rapid process recalls the effect noted by van Schaik and colleagues (2012). Recalling their observation that inference is "affect driven" and so is "very quick" (p. 11:4), we see a clear relationship between the kinds of inferences users make regarding interfaces and the kinds driven by *phronesis*. It seems a parallel process is at work both in the rhetorical creation of the interface by designers and in the hermeneutic interpretation of the interface by users: a process that proceeds indirectly and crookedly, unscientifically, by mapping the similarities and differences between like and unlike things, by formulating conjectures which account for the speculative nature of language. This parallel process, the apparent fact that both designers and users proceed largely through conjecture, brings us at last to our

final insight: that it is most productive to view the interface as a site of collaboration between users and designers.

▌ Interface as Ongoing Collaboration

Collaboration between users and designers requires a particular kind of authentic relationship that is based on a shared moral and ethical framework. Like Aristotle, Gadamer also sees a moral, ethical dimension to the process of conjecture which comprises *phronesis*. It is within this ethical dimension that we find the proper way to conceive of this relationship, as a kind of friendship, and of the interface as a site of participatory meaning-making. This friendship requires the kind of prudence that Gadamer describes when he writes "*phronesis* allows us the self-knowledge of moral reflection" because it is not about knowledge in general, not about technical knowledge or the application of it, instead it is about knowledge of a "concrete moment" and that this kind of wisdom "has meaning only when the parties are in friendship. That is, no matter how wise you are, you can only give advice if you are in a relationship of belonging together, if you care what happens to the other. This is friendship" (Gadamer, 2004, p. 320). This hermeneutic friendship, this "belonging together" is the same word Gadamer uses to describe the relationship between an object and its reflection in a mirror and between a concept and its expression in language. Thus, we see that the essence of the hermeneutic friendship is the same kind of speculative unity employed in language. Words have speculative unity, but so too do speakers and listeners. They reflect each other and in that reflecting gain additional senses of being the being that is language. Now, perhaps, Gadamer's exhortation that, "[b]eing that can be understood is language" (2004, p. 470) is at last made plain. For us to be understood by one another means in a sense that we must become language. Not only is the interface a collaboration through language, but it shows how this collaboration functions: a hermeneutic friendship brought about through *phronesis.*

As we've seen, a proper understanding the hermeneutical event of language implies that we should turn away altogether from seeking a science or mathematics of interfaces and instead try to focus on the kinds of human relationships that allow for better understanding in the first place. If we cannot establish a science or mathematics of interfaces, and if our best tools are the processes of speculation, on the part of the interpreter and conjecture on the part of the designer, processes which are one and the same, then UX studies must embrace the messiness of language and rediscover the freedom of speculation, of alternative meanings, of ambiguity and play.

The concerns that van Schaik and colleagues express when they address the concept of beauty seem to be particularly productive in this regard. Both Gadamer's hermeneutics and rhetorical *technē* have potentially useful contributions to make here. In particular, as Gadamer observes, there is a close relationship

between beauty and light. Noting how light also has a kind of speculative unity, namely because "[l]ight is not only the brightness of that on which it shines; by making something else visible, it is visible itself, and it is not visible in any other way than by making something else visible" (2004, p. 477), Gadamer argues near the end of *Truth and Method* that "This means that beauty has the most important ontological function: that of mediating between idea and appearance. . . . It finds its concrete form in the concept of participation . . . and concerns both the relation of the appearance to the idea and the relation of the ideas to one another" (2004, p. 476). This suggests a fruitful line of inquiry may be studies of light and beauty, of the optics of the human eye and of the understandings of visual perception and cognition documented in design discourse, such as in the work of Rudolph Arnheim and Edward Tufte. Indeed, the entire field of visual rhetoric seems well poised to make contributions along these lines.

Likewise, UX designers could benefit from approaching the interface not as an always imperfect medium that ultimately fails to accurately convey meaning, but instead as a collaboration in which a multiplicity of meanings is possible. By understanding their complementary relationship to users, designers should come to view interfaces as places where people can play at communication, where prudence, discretion, and wisdom are watchwords, places where certainty is impossible, and appearances are always shifting. For design pedagogies, more attention could be paid to developing the productive capacities of Detienne and Vernant's cunning intelligence, the ability to adopt "an oblique course" and which makes "intelligence sufficiently wily and supple to bend in every conceivable way" with a "gait so askew" that it is "ready to go in any direction." The task of design, then becomes, through cunningly twisted methods, to chart "the straightest way to achieve" (1978, p. 6) the good end.

What does this good end look like? Gadamerian scholar Wright relates Heidegger's "two extremes of solicitude . . . an inauthentic and an authentic way of everyday being with another" (1986, p. 197). The first is "a way that leaps in and dominates" and the second a way that "leaps forth and liberates." In the first way, it "takes the other into one's care such that care is taken away from the other and instead provided for the other," while in the second, it "takes the other into one's care in order for the other to develop the ability to take care of himself" (Wright, 1986, p. 196). These ways of being have their correspondence in Gadamer's inauthentic and authentic dialogue and help explain what the good end would actually entail.

Gadamer makes his point by crediting Plato and Aristotle with the unintuitive fact that "it is more difficult to ask questions than to answer them" (2004, p. 356). When we dispense with this notion, however, we can make "the critical distinction between authentic and inauthentic dialogue" (Gadamer, 2004, p. 356). Gadamer goes on to explain: "To someone who engages in dialogue only to prove himself right and not to gain insight, asking questions will indeed seem easier than answering them" (2004, p. 356) because there is no risk of failure. However,

being able to ask the right question is in fact the authentic way to conduct a dialogue. Gadamer writes: "In order to be able to ask, one must want to know, and that means knowing that one does not know" (2004, p. 357). This latter way "leaps forth and liberates" (Wright, 1986, p. 197) because as the questioner moves into the unknown, the questioner is free from having to be right. This is an authentic way of belonging together because it allows the other partner in the dialogue the ability to answer the question, it accords the respect of not knowing the answer and thus making a collaborative answer possible. Here we find perhaps our best recommendation to guide the design of interfaces: not that they should seek to specify meanings, but that they should approach meaning as an open question, something to be negotiated between designers and users. Something to be asked, rather than answered.

This idea, that questions should come first, is already built into the structure of UX studies. The testing phase of development already explicitly acknowledges the priority of the question. Whenever a tester sets a task and asks about various missteps along the way, or about various perceptions, judgments, and feelings, he or she is explicitly concerned with breaking open the meaning of the event. A healthy UX process is always asking questions of users. What are the right questions to ask? For example, while we might ask a user to describe how they feel when interacting with an interface, more collaboratively we may also ask what they take the signs to mean or even what other signs they think might be more apt. This view of collaboration invites us to see users as fellow designers who can provide not only insight, but direction, and this practice should be more regularly incorporated into UX methods.

Finally, much of hermeneutic and rhetorical theory remains undiscovered by user experience studies. As a rhetorician, sometimes reading UX theory gives me *déjà vu*, as a patient scholar rediscovers an ancient concept and gives it a new name. Although Hassenzahl argues convincingly that "User Experience (UX) is not just 'old wine in new bottles'" (2008, p. 11), there is still a strong sense of the familiar. It's not that UX is reiterating old understandings, rather it's more like a feeling of returning home. So, part of the task of rhetorical UX is to better articulate the points of connection between theories of rhetoric, language, and philosophy with the empirical studies done in laboratories. According to what we've seen, there is no need to make this a one-to-one correspondence, or a strictly scientific endeavor, but merely to suggest similarities and differences, as I have done here. To speculate. To conjecture. And most importantly, by doing this to invite discussion, further questions, and an ongoing conversation. This is the larger work toward which I hope this theory contributes.

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