Of Candied Herbs and Happy Babies: Seeking and Searching on Your Own Terms

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A friend asked me to buy some candied herbs for her while I was in Italy. I had never heard of such a thing. It sounded dubious—and entirely likely, therefore, to be some foreign delicacy that I would in fact turn out to adore. And that was the case. But before getting there, I needed to find out where to buy said "candied herbs." My friend had thoughtfully sent me a link to a shop where they were apparently available. But while the shop was easy to find, every time I went, it was closed, windows shuttered.

So I figured I would try to find another source. What better way to do that than to search the Internet? The world is, after all, at my fingertips via a query in a box. "Candied herbs buy torino" yielded no results, at least none I could make sense of. So I translated "candied herbs" into Italian: canditi erbe. I typed this into a search box and got back many (many) pages in Italian, a language I don't speak or read. I translated said pages. No luck. I tried Yahoo! Answers and found recipes for candied everything-you-can-imagine. But, as to where I could buy them in Torino? Still no luck.

Getting truculent, I start typing in broader terms—perhaps the problem was the word "can-

died." I tried various combinations of "sweet" "sugar" "herb" "plant" "eat" "cook" "tourist" "gift" "edible," and various herb names—all of which sounded disgusting when combined with "sugar" or "candy"—sage, basil, borage….and so on. Still no luck.

Since I was looking for a foreign food in a foreign language and would not have been able to recognize a candied herb if one bit me on the nose, I was not really surprised that I was having this problem. But, I also suspected there must be a way to find this elusive information—if only I could just enter the right combination, the correct incantation of words into that little search box.

There is a nice term called "gaslighting" that means a willful undermining of someone's sense of reality in order to drive that person mad. I was feeling a little less sane as I tried to semantically link previously unconnected concepts to generate possible relevant query terms and review the results —so much information, so little of use. The search engine asserted dominance, drawing me out and then underscoring my linguistic (perhaps conceptual) inadequacy: I was free associating and getting punished for my efforts.

In the end, I just kept return-

ing to the shop that my friend referred me to. There in the amazing sweet shop cum apothecary store, circa 1836, lay the fabulous prize.

So what does this all have to do with design? To pose the question differently, what does this have to do with person-centered [1] interaction design? A lot.

Internet search has become the dominant paradigm of information seeking for many of us. However, the paradigm of Internet search is in its infancy, and search as an Internet experience is often construed very narrowly. There is much discussion about matching query terms, indexing, and ranking relevant results, and determining which are the best algorithms to determine which content is delivered back as a result of a query. These are, of course, crucial factors in the design of good search experiences. Search engines have personalities based on how these processes are prioritized and how results are presented.

But as the example above shows, seeking and finding involve (many) keyword queries. And a lot more than a page and a query box is involved. For just that scenario, I opened at least 20 browser windows over two days, interweaving my search

[1] "person" could be "user" or "human" or "agent". I suggest picking one that acknowledges a human is present in the transaction.

for "candied herbs" with alternative activities, including searches for other things: "candied herbs torino," "longboard sales," "united airlines flight information," "Brahmin handbags," "turin shroud," "Taryn Rose shoes," "spime" (I have spared you my crude translations and the typographical and spelling errors.) Often I had many windows open at one time. I copied and pasted content I found that might be relevant into a text editor. I bookmarked potential sites for my friends to look at and translate for relevance. I looked at images of what could be candied herbs; I even found a video showing how to candy things at home. I asked friends by email and instant messenger; I posted photos to Flickr; I searched YouTube. My friends Twittered to ask their friends. I spoke to people by phone.

That was a lot of surf, send, and sift. I should say it was thoroughly enjoyable—a treasure hunt—and ultimately worth it to find and finally experience candied rosemary.

My story is not unusual; it's mundane, even. We routinely engage in human-human, human-machine, human-multimodal representation, human-place (digital and physical) interactions and use multiple browsers, devices and displays, text editors, bookmarking services and applications, notepads and pens. Search is also social—we use the phone, email, social networking sites, and services to seek knowledge from others and to get people to look for things on our behalf.

Fascinated by the wealth of design and engineering challenges in this world of information-finding, Cristen Torrey of

Carnegie Mellon University and I have spent this summer conducting field interviews, collecting stories of the hard-to-find-on-the-Internet—from people not knowing the words for things, to things for which there are no words. We have been charting examples of how people search when they don't know the specific words or terms for the things they are seeking (domain language/literacy), when they don't know how to articulate the concepts (not named and/or complex concepts), and when the content or learning need involves visual, kinetic, or physical knowledge in the pursuit of an embodied skill, such as screen printing, bodycasting, or looking for yoga poses like "Happy Baby" when you know what it is but not what it is called. Our investigations have followed people as they triangulate between different media (words, pictures, videos) and social search sites and forums such as Yahoo! Answers and Flickr, where there are many examples of images that are posted with the title "What is this?" We have begun to characterize searches by first understanding people's term, concept, and domain familiarity, and their willingness to expend energy becoming search strategy literate and/or to turn to collaborative seeking. And we have been looking at whether that which is sought has a name at all. Without getting too linguistically relativist, there are some things for which there are simply no words in one language or domain of expertise but an abundance in another language or domain. Suffice it to say, there are many strategies that people use to find the known and named (recall and

recovery searches), the known but unnamed (discovery and recognition searches), the undefined (recall, describe, and name), and the unknown and unnamed (discovery and/or name).

Clearly, we are not all done in this research and design world of Internet search. There are open questions about what is the appropriate unit of analysis. To be concrete, did my search "session" above start and end in one browser? Across several browsers? Did the search begin with the request and end with the purchase? Or did it end unsuccessfully with the failure to find a second source? Has it ended yet? What are the boundaries of the search experience, and what different kinds of tools are needed to support these different activities? What are the applications that will blur the boundaries between seek, search, browse, recommend, remember, and augment? How can we give the search experience some continuity, over time and place? Observing people engaged in ongoing inquiry and discovery over time, my group has designed an application for project-oriented, multi-media, iterative searches, so people can garner and glean in collaboration with others.

But we need a lot more research. Examples of rich areas include personalization and what that means to people, and considering how mobile search differs from desktop search. We need to design more effectively for domain-specific search. In this regard two of my favorite sites of late are Octopart (http://octopart.com/) and Shazam (http://www.shazam.com/music/portal). Octopart is a search site special-

ized for electronics. It embodies what librarians have been saying about the differences between generalized search versus vertical search, offering deep cataloging and deep linking, as well as nice experimentation with features for refining queries in the electronic domain. Shazam is a music discovery engine that helps you find that elusive, hummable, but unnamable track from your past.

Yes indeed, these are exciting times—there is much design and engineering work to be done. As a result, I get a little irritated when an otherwise perfectly nice person told me that the "real" work of search is what happens at the engineering level and that designers are really involved only in the "fluff." This guy underscores a sad fact of life: that there is a productive but not always comfortable relationship between design and engineering. However, if we think Internet search is only about the underlying engine—what goes on under the hood (the "back end")—then we are mistaken. And of course, design is more than generating graphics for an interface. The interface is the broker between the person, the "user," and the underlying algorithms, and that involves many levels of understanding.

Here are the things I personally and informally associate with design thinking, analysis, and practice, and all of these are needed to move the search experience forward: 1. aesthetics, which, as Don Norman's book *Emotional Design: Why We Love (or Hate) Everyday Things* suggests, are more important than one might think. It is easier to be patient with the worst of tools if it looks good and feels good; 2. graphics, and information repre-

sentation, surfacing information so it is comprehensible, readable in context; 3. the design of interaction and information flows, understanding information in use over time and foundationally, 4. ontologies and information architecture, considering the ways in which information structures underlie and drive information flows and interaction over time—addressing questions of what constitute data and metadata given different orientations, tasks, activities, practices, and worldviews.

It is important that designers of interactive artifacts take an active role in shaping the ways in which information is gained from the user in an interactive way and an active role in understanding how that information is used systemically—by the engine, under the hood. Because it is here that some notional "user" with some model of their "intent" is being tacitly or explicitly constructed. Human-centered design is about providing tools that allow people to acquire and use knowledge over time. Therefore, design professionals are perfectly placed to work with engineers to consider conversational and ideational aspects of enquiry and knowledge exploration, as well as to help people create knowledge that is searchable and ultimately, to develop the dynamic ontologies that are part and parcel of a responsive, reactive, evolving information-seeking experience that utilizes domain-centric, advanced search features. Recent developments mean it is increasingly possible for great design to couple with excellent engineering and prove this point. SearchMonkey and BOSS (Build Your Own Search Service) are

part of Yahoo!'s open search Web services platform [2]. Designers and developers are invited to build on top of the existing infrastructure to create new search experiences.

As a field-based designer/evaluator who likes to observe technologies in action, I often feel like my work is to point out anomalies and to bring about paradigm shifts that are not just changing the look but that are pointing to a shift in the way in which the problem is constructed and therefore the way in which the solution is engineered. Thomas Kuhn, in his work on scientific revolutions, talks about anomalies as instigators of change, of paradigm shifts. He defined an anomaly to be a violation of the "paradigm-induced expectations that govern normal science." If we want a paradigm shift in information seeking and finding, it is up to us to bring about that revolution by more deeply understanding human information seeking and finding, by challenging assumptions that exist about information production and consumption, and showing that information can morph and make itself known to us in more artful ways.

ABOUT THE AUTHOR Dr. Elizabeth Churchill is a principal research scientist at Yahoo! Research leading research in social media. Originally a psychologist by training, for the past 15 years she has studied and designed technologies for effective social connection. At Yahoo, her work focuses on how Internet applications and services are woven into everyday lives. Obsessed with memory and sentiment, in her spare time Elizabeth researches how people manage their digital and physical archives. Elizabeth rates herself a packrat, her greatest joy is an attic stuffed with memorabilia.