Beyond Scenarios: The Role of Storytelling in CSCW Design

Dan Gruen
Lotus Research
55 Cambridge Parkway
Cambridge, MA 02142 USA
+1 617 693 5786
dan_gruen@lotus.com

ABSTRACT
Stories are effective tools for HCI and CSCW design, useful both in facilitating collaboration around the design of a system, and in exploring and conveying the value the system will bring to the people who use it. This paper discusses the differences between stories and usage scenarios, and the unique way stories reveal the overall value of a user experience, drawing from specific experiences using stories with different design teams. A key lesson learned is the need to include people with specific storytelling and storycrafting skills to fully benefit from using stories in design.

Keywords
Stories, scenarios, participatory design

INTRODUCTION
It is often helpful to explain an idea, a product, or an opportunity through a story. Stories and scenario-based methods help us to do this by giving us a collection of tools for eliciting, collecting, writing, critiquing, and communicating with others about the real-world use of computer systems.

As the terms are used colloquially and by design and research communities in a variety of ways, it is important to define here what we mean by stories, and how they differ from simple scenarios. We use scenarios to refer to descriptions of sequences of events that represent selected elements of a setting and activity. Scenarios around a technological artifact typically focus on the way a system is used to perform a specific task, but often do not include detailed descriptions of the people involved in a task, or their motivations, values and goals. Scenarios can vary greatly in level of detail and often are quite generic.

For example, a scenario showing the sequence of actions and screens used to fill out an online expense report need not get into much detail as to who is using the system, how the expense report task fits into a broader context and goal, or why it is beneficial that an online system is used.

Scenarios have been used extensively in training [7] and in HCI for communication and requirements definition [4,6]. In general, such efforts focus on developing the right sequence of actions to capture and convey an activity, largely as a way of eliciting requirements.

Stories, on the other hand, are by very nature specific, with fleshed-out characters and settings, dramatic elements, well-formed plotlines, and enough detail to understand the people who will use a system and the value it will bring to their lives [3].

Stories enhance the design process in many ways. Because stories capture in detail the real-world context in which a new technology will be used, they help determine which functions will be useful, how they should be presented, and what integration with other tools, people and information will be important. Stories can be a highly effective way of communicating to others problems with current work processes and the value of new functionalities being proposed. Stories are useful with multidisciplinary or cross-organizational teams because they tend to serve as a "common language" that spans differences in background and organizational status and focuses attention on the people who will use the system (a constituency often absent from many design discussions). Stories are particularly valuable for conveying the benefits of collaborative systems, whose full value is not in any individual user task, set of screens or specific functionality, but in the real world consequences of the collaboration they enable among multiple people.

Lotus Research is increasingly using story-based methods in our own work and in consultation with other design and
development projects at Lotus and with IBM, our parent company. To date, we have used stories as an element in more than fifteen projects. For example, a story was created to illustrate categories of realtime support for collaboration, including awareness, lightweight communication, and joint work on shared objects. The story was rendered as a detailed visual storyboard (Fig. 1). Although the story was set in the customer service office of a cell-phone service provider, viewers from other industries were able to see how the functions provided would be useful in their own domains. The story was valuable in making the case that capabilities like chat and buddy lists, popularized in social settings, would provide real value to businesses if integrated deeply with their work.

Fig. 1: Two scenes from the visual depiction of the cell-phone customer service story. The images shows the protagonist, a trainee, getting help from a colleague, and illustrate how realtime support would be valuable to her.

The story was also a useful tool for eliciting feedback and design requirements. People easily mapped the situations described to their own domains, and explored how they might differ. A frequent comment was of the type: “the exact same thing happens here, only it’s different” followed by a description of how a feature or capability would have to be changed to fit their work practice.

Our success with stories can be contrasted with that of a more generic scenario created for an experimental workflow and document management system. The scenario showed a detailed sequence of actions (“The author clicks a share button to send the document to a colleague for comment. The colleague modifies a paragraph and adds a note.”) without establishing details of the setting, or explaining why the colleague needed to make the change. The resulting scenario was harder to follow, more forgettable, and less successful at conveying the value of the tool.

COMPELLING STORIES, COMPELLING DESIGNS
We have learned that to be effective, a design story must have many of the same elements of a compelling movie, novel, or short story.

What Makes a Good Story?
The question of what makes a good story is a deep one, with no single answer. There are clearly many ways to craft and tell a story. Furthermore, prototypical story elements and structure differ from culture to culture. This paper will focus on elements that discussions of Western literature often identify as contributing to compelling stories. These include: detailed characters with whom the audience can empathize; rich, contextualized settings; goals (what the protagonist is trying to accomplish and why); causality; and obstacles (what problems the protagonist has to overcome to accomplish the goal). Dramatic elements such as time locks (constraints on the time in which the goal must be accomplished) or option locks (constraints on the actions or items that can be used to accomplish the goal) heighten the dramatic impact of the story [2,3,5].

Story Elements and Design
Interestingly, many of the same elements required to tell a compelling story are required to design a useful and compelling product or service. These include:

Fleshed-out Characters
Good stories have fleshed-out characters with details that allow an audience to understand, relate to, and often empathize with them as people. This includes having a sense of their values, fears, weaknesses and overall goals: knowing what is important to them and what they would like to avoid. Similarly, in design, it is important to understand in depth the people who will use and be impacted by a proposed system. Understanding the broader goals and values of these people, and being sensitive to their limitations, can provide important guidance as design decisions are made.

Detailed Settings
Compelling stories generally include details of time and place, helping the audience situate themselves in the setting in which the story takes place. Similarly, in design, it is
important to understand the overall environment in which a tool or system will be used, and the other artifacts and activities with which it must fit.

Goals and Obstacles
The plots of compelling stories typically are based around a conflict or obstacle that must be overcome to accomplish a goal. Similarly, a designer should have a clear sense of the goals being accomplished through the use of a system or the problems it solves. What is the user trying to accomplish and how does the system support it? In essence, this is the raison d’etre of the system: why it is being built in the first place, and how the proposed solution is better than others the user could choose.

Causality
Stories are more than lists of unrelated events. Events in stories are connected through causal relationships, though these relationships sometimes only become clear at the end. Similarly, design stories should show the proposed system playing a causal role in furthering the goals of the people who use it, not simply being used in an incidental way.

“Write about what you know”
A popular adage is that writers should “write about what they know.” In a similar sense, designers should “design for what they know.” The more designers are familiar with the specifics of the people and settings for which they design, the more their designs are effective. In practice, this points to the need for field studies and ethnographic research much as an author would engage in background research before writing about an unfamiliar domain.

Dramatic Elements
Dramatic elements and plotlines are essential to stories, adding to their interest and emotional engagement. Dramatic elements heighten the sense of something being at stake and reveal characters’ core values. Similarly, in system design, anticipating crises and critical situations can lead to systems that are focused, and support essential functionalities robustly in diverse situations.

The importance of dramatic elements in design stories came as a revelation to us. Initially, our sense was that our stories should focus on describing systems used in typical, unspectacular activities as a way of emphasizing their value in everyday situations. There was a fear that including crises and other exceptional events would detract from the generalizability of the stories, making it harder for people to map them to their own, presumably more controlled domains. We have learned, however, that including dramatic elements such as time and option locks adds interest to stories and helps focus attention on the essential benefits of the systems they depict. Including such elements leads to stories that involve situations in which the tool will make a critical difference.

For example, a story created around a proposed expertise-location system began by showing the system being used to locate people to work on a sports Website that would let viewers monitor the positions of athletes during an upcoming triathlon. The dramatic effect of the story (and the value of the system to its users) was heightened by the information that the person in charge of the project had advocated increasing the company’s investment in Web technology and that he was under pressure to prove that his recommendation was a good one. A later scene involved one of the company’s public relations representatives who gets a call from a journalist asking her to comment—by five that evening—on possible health effects of the technology they were planning to use to monitor the athletes’ locations. The PR person had not heard of the project before, but knows she will be blamed if a negative story appears in the press. Sweat running down her spine, she uses the system to locate the people working on the triathlon project, determine if any health issues really exist, and prepare a response for the journalist.

Stories as Proxies for Design
Due Diligence
Because stories involve many of the elements that will be important for a successful product, the act of creating a story can be a way of ensuring due-diligence that critical issues have been addressed. Constructing a story at the early stage of a project can insure that the research homework necessary to design an effective solution has been done. Furthermore, it helps the team understand the results of such research not just as individual pieces of data, but in a coherent, causally-connected way. To phrase it somewhat harshly: If you cannot tell a compelling story about how a system you are designing will be used and the value it will bring to the people who will use it, you should question why the system is being built in the first place. In practice, we have found that much of the effort required to construct a story is effort that the product team needs to do anyway. Constructing a story can ensure that this work is done early in the process.

THREE EXPERIENCES USING STORIES IN DESIGN
The following descriptions illustrate how stories were used in three design projects. Each illustrates a different aspect of the value of using stories in design, and shows the importance of having someone with storytelling skills involved in the process to realize that value.

1. Online Access to a Software Subscription System
Large organizations often purchase software through subscriptions, in which a fee is paid to allow a specified number of users to use the software for a set period of time. Subscriptions can guarantee that the organization will have access to the latest release of the software, and often include support and maintenance agreements. Subscriptions are renewed periodically (typically annually), a process that often includes modifications to the mix of products, number of users, and other provisions of the contract.
The group responsible for subscriptions for a major software product wanted to create a Web front end to allow customers to purchase and renew subscriptions and manage their accounts online. One of their goals was to open the subscription model to smaller businesses. An early goal was to create a storyboard, showing the various screens the customer would access to perform a set of basic tasks such as: selecting, verifying and modifying details of an existing account; understanding alternatives; obtaining specific pricing information; and renewing subscriptions. We were asked to assist with this project largely because of our previous experience creating visual storyboards. Members of the subscription group had seen these storyboards and wanted a similar presentation largely to help justify funding for their planned Web design.

The group had an extensive flowchart (Fig.2) posted along the wall of their meeting area, outlining the internal process the company followed to initiate and renew software subscriptions. Their initial plan was to use this process as the starting point for the structure of the Website, by adding a Web screen or dialog for each task in the flowchart.

When we discussed creating a visual storyboard for this project, we emphasized that a critical element was getting the story right, which required knowing in detail who would use the system, why they were interested in the software in the first place, what their concerns and goals were, and so on. When we first asked the group who their customer would be, we were told “a small to medium-sized business” in the rather generic terms taken from their marketing studies. Their goals were similarly described generically, in terms such as “reducing cost” or “speeding access to information.”

As we worked with the group to define a setting, characters, goals, and problems with the specificity needed for a compelling story, questions arose which pointed to the need for the group to include participants from other departments (including sales and customer service) and conduct a series of customer interviews. Ultimately, we created a story around the fictional setting of a growing playground equipment manufacturer, which was representative of the intended users (Fig.3).

Though fictional, details were representative of actual intended users.

The specific problems faced by the company included the cost of updating and maintaining printed catalogs and materials.
the customer site involved in purchasing and managing a software subscription.

2. Video Indexing in Distance Learning
The second project involved a story created to show the integration of an automatic video indexing and categorization tool into a distance learning system. The initial story created by the team for this project did include a detailed setting, situation, and set of characters. The story involved a salesperson who needed to learn quickly about 3D rendering techniques in preparation for an upcoming sales call. The learning system included a video clip in which a lecturer explained details of the rendering process and showed several examples. The plotline of the story had one serious problem, however. Though it nicely demonstrated why access to video could be useful in a learning system, it did not illustrate any particular value of the specific indexing and categorization features the automatic tool would provide.

In conversations with the team that had designed the automatic indexing tool, we worked to translate the general functionality of the tool to the specific value it would bring to the characters in the story. We realized that from the perspective of course designers, the automatic tool meant that a two-hour videotape they might happen to have could be included meaningfully in the students’ experience with minimal extra effort to locate and extract a segment, and without requiring that students sit through the entire video to get value from it. An analogy to the way instructors can refer to other materials, such as books, emerged. Just as a professor could say "there’s a good sketch of this in Gray’s Anatomy,” and know that the index would help students find the relevant section easily, a course creator could say "there's a nice example of this in the XYZ video” and know that the tool would help students find it. Similarly, the thumbnails the tool would automatically create could let students notice other items of interest, much as students looking for an illustration in Gray’s Anatomy might notice others that catch their interest and help clarify points they were having problems understanding.

The story was changed so that the entire video was not central to the lesson. Instead, the instructor references a short portion of the video as something of an aside, mentioning that it contains a good summary of the rendering process and some nice examples. The story was further changed so that the salesperson, after viewing the brief segment the instructor had mentioned, glances over the other thumbnails and notices one for a segment containing a demonstration of 3D modeling being used to understand the effects of helicopter blade designs on their wakes. He watches this segment and gets an idea that plays a crucial role in his sales call the next day to his customer, a yacht design company also concerned with understanding wakes. The story played an important role in helping the team explore and understand the broader implications of their technology for a specific set of users.

3. Web-Based Virtual Community
The third project involved an international organization of professionals interested in creating an enhanced Website for their existing, email-based virtual community. We started by focusing on characters and setting, using information from surveys and interviews with people in the community to ensure that the story accurately represented the various people in the community and their problems, goals and needs. We also worked on the plot to be sure that it included events—based on anecdotes people reported—that showed limitations in the current email system that an enhanced Website might overcome. These included the need for better conversational threads, ways of managing the often-overwhelming amount of traffic, and better access to archived information.

After the story itself—involving international cultural differences related to balancing work and personal life—was completed, the team set out to render the story as a visual storyboard. Early attempts by a graphic artist assigned to the project were too realistic, looking more like an exact, screen-by-screen proposal for the Website itself instead of an exploration of its general functionality. This tended to focus comments on low-level user interface decisions in how the site was depicted instead of more broadly on which aspects of the site itself were a good idea. (See [1] for a good discussion of this phenomenon.) The team needed guidance to find a style that was appropriately rough, giving the broader picture but making fewer specific interface claims. The team also found that it needed help in determining the right screens and images to show, both of people and of the proposed system, to tell the story in a way that flowed smoothly and was easily understood. They reported that having someone with experience in crafting visual storyboards consult on the project was important in determining the right level of detail, specific screens and transitions to show.

THE ROLE OF STORYTELLERS IN DESIGN
Each of these experiences illustrates aspects of using stories in design. They show the importance of story crafting to understand the people who will use a system, to explore the value the system will bring to their lives, and to represent the story in a way that effectively serves as a tool for communication among members of the design team and with the other constituencies involved in a project.

A key lesson that emerges from our experiences using stories in design is that it is important to have people with skills and experience in storytelling and story depiction as part of the design team. By focusing attention on elements that contribute to compelling stories, they cause elements critical to the design of the system itself to be recognized and acknowledged at the start of and throughout the design process.
Storytelling is a talent and a skill. The need for people with specific story skills exists, despite the fact that story construction is a process that is particularly open to broad participation. This should not come as a surprise; while most people can understand, appreciate, and empathize with a good story, not everyone knows how to write one. Similarly, knowing how to represent a story visually is itself an art, much as knowing how to direct or edit a film.

CONCLUSIONS
Stories are powerful tools for insuring the overall value and user experience of designed systems. This is particularly true when designing collaborative systems, whose true value stems from the real world consequences of the collaboration they enable among the people who use them. For stories to be maximally effective, they must include many of the same narrative elements that contribute to a compelling novel, short story, or movie. In practice this means that teams using stories as a design tool should include participants with specific talent, experience or skill in crafting stories.

Fortunately, we have found that people can learn to be better storytellers and storycrafters through practice, training, and by becoming sensitive to the elements that lead to effective stories. The bookshelf of every user experience designer should contain, along with texts on HCI, cognitive science, ethnography, and graphical technique, a few good books on crafting stories.

ACKNOWLEDGMENTS
Thanks to Jessica Friedman and Michael Muller who reviewed versions of this paper; Peter Orton for his valuable insights on story and screenwriting technique; Maida Eisenberg for editing advice; and Tina Adams for two of the illustrations.

REFERENCES