

Generative Walkthrough

Many designers, particularly those without social science training, have difficulty bridging the gap between the social science literature and the details of the design at hand. Abstract social science concepts are difficult to translate into specific design alternatives. This is not the fault of social scientists, who find it difficult to extract specific ‘implications for design’ from their findings. It is rarely easy to translate a particular insight about how human beings interact with technology into a simple design recommendation.

Generative Walkthroughs combine analysis and generation of new ideas to support the *redesign* phase of an iterative design process. Your goal is to re-frame your designs in light of relevant socio-technical phenomena and theories that reveal insights as to how human beings interact with technology in the world. You begin with a sequential design resource that you have created, usually a scenario, storyboard or video prototype. Then examine each interaction point in turn from the perspective of one of five socio-technical principles: *situated action, rhythms & routines, co-adaptive systems, peripheral awareness* and *distributed cognition*. At each step, brainstorm new design alternatives that reflect the design principle in question. Think terms of the user experience and provide concrete examples of how a real person might interact with the proposed technology at that interaction point. This combination of structured walkthroughs with focused brainstorming should help you, even if you have little social science background, to generate concrete, actionable ideas that reflect key findings from the social science literature.

Roles: Presenter: identifies principle(s); presents material step by step, limit time
Scribe: captures all comments from participants
Participants: generate ideas according to the design principle(s)

Preparation: Choose a design focus, participant roles and design principles. Select material.

Procedure: Ensure that everyone can see the material. Presenter reminds participants what principles to focus on. (You may decide to all brainstorm ideas related to a single principle or divide them among yourselves, so that different people address different principles.)

For video prototypes, show the whole sequence first, without comments. then proceed step by step, stopping at each interaction point. Try to generate at least three new ideas at each interaction point. (Some ideas may require you to completely change the design concept, which is fine.) Do not forget to avoid criticizing and defending design choices. Your goal is to use the time to generate as many new insights and ideas as possible.

Note that this a within-group walkthrough, with the goal of generating as many new ideas as possible, considering each socio-technical principle in light of each interaction point.

Generative Walkthrough: Socio-technical principles

Situated Action Go beyond planned activities;
Beyond planning Users act in unforeseen circumstances
1. **Emergent action:** User behavior emerges in specific situations, regardless of the plan.
2. **Co-located artifacts:** Objects next to each other offer opportunities for situated action.

Rhythms & routines Build upon routine activities and spatial patterns;
Identify use patterns Users integrate systems into their daily lives
1. **Biological rhythms:** External factors influence when we are hungry and feel sleepy.
2. **Temporal routines:** We often perform the same activities at the same times of day.
3. **Spatial routines:** We often perform the same activities in the same places.

Peripheral awareness Design for both focus and periphery;
design the periphery Users vary degree of engagement
1. **Focused attention:** People may concentrate on highlighted or important information.
2. **Peripheral awareness:** People remain aware of background information.

Co-adaptation Expect users to re-interpret and customize;
re-interpret use Enable capture and sharing of customizations
1. **Learning:** People need to understand what the system is capable of and how their actions relate to the system's behavior.
2. **Appropriation:** People should be able to redefine the interaction and use the system in novel ways.

Distributed cognition Let objects and other people reduce cognitive load
"outside the head" for memory or communication tasks
1. **Memory aids:** Physical objects form part of our memory, enabling us to successfully forget, since we can return to the object to retrieve the information.
2. **Boundary objects:** People may share the same object, but interpret them differently. The same object can have multiple meanings to different people.

Exercise: Generative Walkthrough

Group: _____

Situated Action

Phenomenon: Human action is constantly constructed and reconstructed from dynamic interactions with the material and social worlds. Lucy Suchman argues that human action is an emergent response to numerous aspects of any given moment. Suchman offers the example of the role of a plan when steering a canoe through a series of rapids: “The purpose of the plan in this case is not to get your canoe through the rapids, but rather to orient you in such a way that you can obtain the best possible position from which to use those embodied skills on which, in the final analysis, your success depends.” Her example contrasts the plan to the actual moment-to-moment behavior. In the end, the plan of steering to a particular location does not correspond at all to the path taken, being influenced by the waves, winds, water currents, visibility, etc. She describes plans as “resources for situated action”.

Key points:

1. **Emergent action:** The user’s behavior that emerges in a specific situation, regardless of the plan.
2. **Co-located artifacts:** Objects that are physically located next to each other may offer new opportunities for situated action.

Evaluated Project: _____

Presenter: _____ Scribe: _____

Interaction point 1: _____

Interaction point 2: _____

Interaction point 3: _____

Interaction point 4: _____

Interaction point 5: _____

Interaction point 6: _____

Interaction point 7: _____

Interaction point 8: _____

Exercise: Generative Walkthrough

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Rhythms and Routines

Phenomenon: People act according to semi-predicable routines and respond to environmental rhythms, including changes in daylight or season and placement of objects in space. We are all influenced by external, repetitive events, such as the daily rise and setting of the sun and the changing of the seasons. These create powerful biological rhythms that influence when we feel hungry or sleepy.

We often establish temporal routines based on these rhythms, such as when we go to work or have lunch every day. Palen & Aaløkke found that the elderly created logical practices surrounding daily rhythms to keep track of their medications, e.g., putting pill boxes near the breadbasket in order to remember to take their medicine with breakfast. They also combined spatial and temporal organizing strategies, such as placing pills in a left-to-right configuration.

Crabtree & Rodden studied spatial routines in people's homes. They found that: communication media and resources are located in particular, known, ecological habitats; activity centers are places where media are produced, consumed and transformed; and coordination displays are places where media are displayed for coordination purposes. The predictable actions of family members enable the maintenance of these patterns, for example: whoever comes home first brings the mail inside, or, leaving an envelop addressed to a child at his/her 'place' at the dining table.

- Key points:**
1. **Biological rhythms:** External factors influence when we are hungry and feel sleepy.
 2. **Temporal routines:** We often perform the same activities at the same times of day.
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Peripheral Awareness

Phenomenon: Although people often focus their attention, they also maintain peripheral awareness of events and environmental changes in the surrounding world. Heath & Luff's seminal work on the London Underground control room served to illustrate how peripheral awareness is critical in workgroups. In this study, a controller operated the train schedules and another operator made all announcements. Their work was tightly integrated through constant awareness of the other's activities: through extra words uttered to the self, placement of artifacts to be within visual range, body language. The operators would conduct 'private' activities with subtle 'public' demonstrations so that co-located others could be kept aware of actions without prying in private space. Heath & Luff argued in favor of interactive systems that permit seamless movement from private to public residuals of activities.

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Co-Adaptive Systems

Phenomenon: Technology use involves two simultaneous processes: Users adapt their behavior to meet the demands of the technology and they adapt the technology to their needs, sometimes in unforeseen ways. Wendy Mackay describes two longitudinal studies that followed individual users as they used and adapted software in ways unpredicted by the original designers. Users redefined the basic interaction model of the Information Lens, an electronic mail filter, to create context-specific groups of rules that could be run at any time. In a different context, she tracked how Unix users customized and shared their configuration files, either adapting their behavior to fit that specified by the files of their colleagues or creating innovative new ways of working that they shared with colleagues.

Key points:

1. **Learning:** People need to understand what the system is capable of and how their actions relate to the system's behavior.
2. **Appropriation:** People should be able to redefine the interaction and use the system in novel ways.

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Distributed Cognition

Phenomenon: Human knowledge and cognition are not confined to the individual. Instead, they are distributed by placing memories, facts, or knowledge on the objects, individuals, and tools in our environment. The concept of distributed cognition applies the models of cognition beyond the confines of the physical skill to include groups of people, artifacts, places and culture. Ed Hutchins studied the coordinated work of Navy personnel engaged in navigation tasks. He found that different members of the group understood and took responsibility for separate parts of the tasks. Artifacts were essential to the coordination of work and members interacted with artifacts in different ways based on background and experience. Suchman discusses the notion of 'reconfiguration', emphasizing the relationships between humans and machine and how relationships can be reconfigured to change meaning and power. For example, the meaning of a gun is defined by whether the person has the gun in the cupboard, in the pocket or in the hand.

Key points:

1. **Memory aids:** Physical objects form part of our memory, enabling us to successfully forget, since we can return to the object to retrieve the information.
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