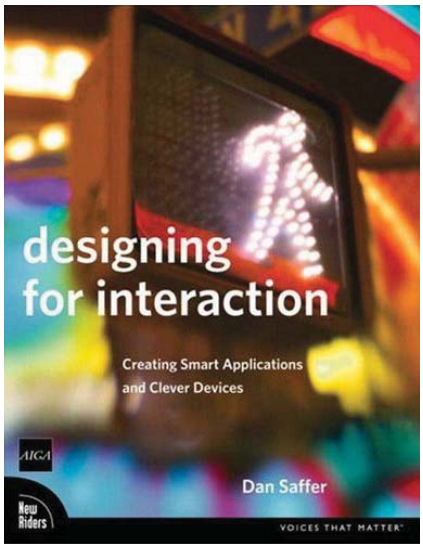
Systems Design



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The following text is the pre-edited version of an interview of Hugh Dubberly by Dan Saffer. The interview was performed via email in February of 2006, and was published in book form later that year.

What is systems design?

Systems design is simply the design of systems. It implies a systematic and rigorous approach to design—an approach demanded by the scale and complexity of many systems problems.

Where did it come from?

Systems design first appeared shortly before World War II as engineers grappled with complex communications and control problems. They formalized their work in the new disciplines of information theory, operations research, and cybernetics. In the 1960s, members of the design methods movement (especially Horst Rittel and others at Ulm and Berkeley) transferred this knowledge to the design world. Systems design continues to flourish at schools interested in design planning and within the world of computer science. Among its most important legacies is a research field known as design rationale, which concerns systems for making and documenting design decisions.

What can designers learn from systems design?

Today, ideas from design methods and systems design may be more relevant to designers than ever before—as more and more designers collaborate on designing software and complex information spaces. Frameworks suggested by systems design are especially useful in modeling interaction and conversation. They are also useful in modeling the design process itself.

What is the most important thing to be aware of in systems design?

A systems approach to design asks:

- For this situation, what is the system?
- What is the environment?
- What goal does the system have in relation to its environment?
- What is the feedback loop by which the system corrects its actions?
- How does the system measure whether it has achieved its goal?
- Who defines the system, environment, goal, etc.—and monitors it?
- What resources does the system have for maintaining the relationship it desires?
- Are its resources sufficient to meet its purpose?

Is systems design incompatible with user-centered design?

A systems approach to design is entirely compatible with a user-centered approach. Indeed, the core of both approaches is understanding user goals. A systems approach looks at users in relation to a context and in terms of their interaction with devices, with each other, and with themselves.

What is the relationship between systems design and cybernetics?

Cybernetics (the science of feedback) provides an approach to systems and a set of frameworks and tools. Among the most important ideas for designers:

- Definition of a system depends on point of view (subjectivity)
- We are responsible for our actions (ethical stance)
- All interaction is a form of conversation
- All conversation involves goals, understandings, and agreements

Are there times when systems design isn't appropriate?

A systems approach to design is most appropriate for projects involving large systems or systems of systems. Such projects typically involve many people, from many disciplines, working together over an extended period of time. They need tools to cope with their project's complexity: to define goals, facilitate communications, and manage processes. Solo designers working on small projects may find the same tools a bit cumbersome for their needs.