Grounding IS Design Education in the First Principles of a Designerly Way of Knowing

Les Waguespack, Ph.D.                Jeff Babb, Ph.D.
Computer Information Systems Department

EDSIGCon 2016, Las Vegas, NV
Overview

Information systems as social constructs must respect the humanity of the community they serve.

Information systems education must reconsider its focus on “problem solving” in favor of an emphasis on “design!”

Design as a practical skill is a critical ingredient in successfully educated information systems professionals.

Following the lead of evolving “agile development,” IS education should foster a “designerly way of knowing” in the formation of IS professionals.
Technical Rationality

The conceptualization of design as a learning goal in computing is usually *problem-solving* that perseverates on *feasibility*.

“Problem-solving” when narrowly emphasized proceeds from “technical rationality” (i.e. computability).
Technical Rationality

According to Herbert Simon … the process of rational decision-making is an act of choosing among alternatives which have been assigned different valuations. It involves the following process:

1. Listing all of the alternative strategies.

2. Determining all the consequences that follow upon each of these strategies.

3. Comparatively evaluating these sets of consequences.
Technical Rationality

According to Herbert Simon … the process of rational decision-making is an act of choosing among alternatives which have been assigned different valuations. It involves the following process:

1. Listing all of the alternative strategies.

2. Determining all the consequences that follow upon each of these strategies.

3. Comparatively evaluating these sets of consequences.

Simon, however, admits that total rationality is an unattainable idealization in real decision-making – who can be aware of all existing alternatives?

(Simon quoted by Skyttner, 2005)
Typically, IS Pedagogy Fails to Distinguish Design from Problem-Solving Thus De-humanizing Any Sense of Quality

“…[the] distinction between design and implementation has faded from the structure of computing education. To ignore the conceptual distinction between the design and an implementation is tantamount to accepting any ‘solution’ without even considering [quality]…” (Waguespack 2011)
The Challenge of IS Design

The multi-dimensionality and psycho-social nature of IS design eliminates the possibility of “a right answer” and hence the relevance of “satisficing.”

(Design is always satisficing!!)

“... decision makers can satisfice either by finding optimum solutions for a simplified world, or by finding satisfactory solutions for a more realistic world.”

(Simon, Nobel Memorial Lecture, 8 December, 1978)

Satisfaction evidences an appreciative system {an epistemology (world-view) that guides choices in every day life} held by every human being formed consciously and tacitly through life experience.
The Challenge of IS Design

An information systems development project by its basic nature is a —-

“WICKED PROBLEM!”

Software development is a problem to solve

IS design is a wicked problem to **satisfice**
The “WICKED” Context of IS Development

Joining Perspectives

Technology

Organizational Aspiration

Perspectives in Conflict
Borrowing Perspective from Design Pros -

- In a design project it is often not at all clear what ‘the problem’ is; it may have been only loosely defined by the client, many constraints and criteria may be undefined, and everyone involved in the project may know that goals may be re-defined during the project.

- In design, ‘problems’ are often defined only in relation to ideas for their ‘solution’, and designers do not typically proceed by first attempting to define their problems rigorously.

(Cross, 2007, p. 99)
Borrowing Perspective from Design Pros -

• Typically, in a succession of trial solutions each attempt provides a concrete object with which to constructively challenge the stakeholders’ confidence in their expressed intensions and to refine an apposite vocabulary to hone the dialogue between stakeholders and designers that exposes “what’s working” and “what’s not!”

• Each prototype reveals a degree of accord (or discord) between intensions and artifact. “Proposed solutions often directly remind designers of issues to consider. The problem and solution co-evolve.”

(Kolodner & Wills, 1966)
Borrowing Perspective from Design Pros -

- Only some constraints are ‘given’ in a design problem; other constraints are ‘introduced’ by the designer from domain knowledge, and others are ‘derived’ by the designer during the exploration of particular solution concepts.

(Ullman, 1988)
Borrowing Perspective from Design Pros -

- Designers are not limited to ‘given’ problems, but find and formulate problems within the broad context of the design brief.

- This is the characteristic of the reflective practice identified by Schön (1983) as problem setting: ‘Problem setting is the process in which, interactively, we name the things to which we will attend and frame the context in which we will attend to them’.

(Schön quoted by Cross, 2007, p. 101)
A Designerly Way of Knowing – of “Seeing”

Successful Design Reconciles World-Views

Designer

Stakeholder

Artifact Design Space
First Principles of a Designerly Way of Knowing

- Human Knowing and Conscious Expression Are Imperfect
- The Operative Appreciative Systems Determine the Whole of the Design Space
- The Medium of Construction Determines the Design Choices
- Design is Continuous Exploring and Learning in a Dynamic Environment
- Design Reconciles World-Views
Forming a Designerly Way of Knowing -

- Practice Knowledge of a Domain
- Technology Theory and Practice
- System Life Cycle Project Experience
- Discriminating Between Requirements and Design Choices
- Collaboration and Development Methodology
- Incubating Creativity
Q & A?

LWaguespack@Bentley.edu

JBabb@mail.wtamu.edu