Contexts of Instructional Design

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Abstract: If a designer has clearly in mind what is being designed it is more likely that an appropriate approach will be taken to designing and that the most appropriate conceptual building blocks will be incorporated into its architecture. This paper describes two alternative design contexts which each place within a unique perspective the nature of designing or the thing being designed. Each of the contexts comes from outside the field of instructional design but each is readily applicable to instructional design thinking. These two examples of design contexts are used to illustrate the concept of a *design context* with the aim of initiating discussion of this new concept within the instructional design community. Further consideration of this concept is sure to reveal additional design contexts capable of helping designers locate their designs within the larger design space thus defined.

INTRODUCTION

From the earliest days of educational technology and throughout the history of formalized instructional development up to the present, the question of what was being or what might be designed has hung as a backdrop to the conversation, seldom being addressed directly. Instead, the designed object of choice in any given period of time has tended to be understood, in terms of a prevailing design discourse, which in turn has been dominated by one or more prevailing philosophies. For example, during and after World War I, the emphasis was on the development of industrial job training, and public education courses that implemented reformist principles. The main terms of the discourse at that time were task, job analysis, and teaching method in the former case, and objective, measurement, and evaluation in the latter (Schrock, 1995; Kridel & Bullough, 2007).

This first discourse prevailed until after World War II, when the growing influence of behaviorism introduced a new discourse which included terms for mechanical devices, programs, and detailed strategic structures—frames, responses, reinforcements, and sequences. These became the objects of design. Similarly, as media studies took center stage, the media product itself became the object of design—the film, the filmstrip, the workbook, the synchronized slide-sound production, the self-instructional package.

In almost every case historically, as one prevailing discourse gives way to a new one, the terms, and therefore the design objects of the old discourse, are left behind. Progress in this kind of world is represented not by the accumulation of useful designed object types but rather by the leaving behind of old philosophies, discourses, and objects and their replacement with new ones. So at present, for example, the instructional design literature is not abuzz with new findings on programmed instruction and self-contained, self-instructional modules, but rather on findings on Web-based media forms of all kinds. The effect of this is that progress in design has not been cumulative, and designers still tend to be confined to a narrow range of product concepts which are determined by a prevailing philosophy. Moreover, the discussion tends to center on outward, media-related forms rather than on the inner dynamic of the designed thing.

The pattern of philosophy-dominated discourse and discourse-determined design objects continues to the present time, as evidenced by the claims made for "constructivist instructional designs", which are inspired by the various views of the constructivist discourse and philosophy on the one hand and, at the other end of the continuum, self-contained direct instruction objects and methods inspired by the discourse and philosophy of direct instruction.

The notable exception to this has been the persistence of tasks, job analyses, objectives, measures, and evaluations from the very first discourse. The meanings of these designed objects have changed over time, and the details of their construction and use have been much elaborated, but as designed objects they still form a core of what is created during instructional design practice, though this tends to be true more in the area of direct instruction. In some areas of design even these are looked upon as relics of the past (mistakenly) associated with now less-fashionable behaviorist views and are therefore of less general interest. How long has it been since the last substantive academic publication on instructional objectives in a world gone mad about objectives?

One thought tool that has been missing for designers up to this point is a description of the broader conceptual contexts within which particular design objects occupy a place, relative to each other. Designers need a sense of the contexts within which numerous potentially useful designable artifacts from all discourses and of many kinds exist from which the designer may choose to satisfy specific purposes. Such contexts taken together would form the foundations of a design lexicon independent of different time periods and their discourses and philosophies.

Design contexts are dimensional spaces wherein different structural or architectural concepts of design radiate along some coherent dimension, producing a range of structural-functional patterns of things or objects which are designable. That is, different abstract forms would be placed along one or more continua, providing the designer a principled lexicon of architectural and functional types, giving what was before considered only in isolation a context that explains it, gives a rationale for its variations, and relates it structurally or in terms of purpose to other forms.

Design contexts consist of arrays of objects which populate a space defined by a principle of interest to a designer, for example, increasing complexity, increasing size, increasing formalism, increasing economy, or any other factor of interest to a designer in need of making a selection from the many possibilities. The objects inhabiting a design context are arranged along the dimension of value. A design context allows the designer to select the kind of thing to be designed from a range of object forms, each of which exhibits some set of structural or functional properties that suit it particularly for a type of service within real-world settings.

The consequence to designers of not having the concept of design contexts is that the designer is left without orientational terms with which to describe the kinds or variations of things being designed, their properties, and the rationale for having chosen one over another. Without design contexts, decisions about what to design can be made on the basis of what is easy or fashionable. In this state, the thing being designed can only be determined by the prevailing philosophical and discourse-related fashion. But today's categories are certain to age and be replaced as fashion changes. At present, as philosophies fall in and out of fashion, designers have no principle for accumulating patterns of designed things in relation to each other, and designers have no meta-language with which to communicate with each other and with design team members to promote shared conceptions of what is being created. Without this tool for professional communication, the natural alternative is for designers to either re-invent new design terms with the new design team or else to converse in terms of design process, which is the prevailing state of things at present: design process dominates design conversation, design pedagogy, and design literature. With a little imagination, the prevailing lore of design process itself can be seen as a design context that is dimensioned by the principles of passing time and intermediate product forms.

This paper explores the concept *design context* and examines two examples of contexts taken from the literature of other design fields where the concept of design contexts has been introduced. The paper proposes that both of the described design contexts are suitable for the purposes of instructional designers without modification and that this opens to instructional designers a new kind of thought tool that allows: (1) more meaningful conversation in the abstract about the properties of designed things, (2) more productive discussions regarding product architectures during the early stages of designing, and (3) the possibility of constructing additional contexts which describe and

relate families of designed things. The design contexts described in this paper are Krippendorff's *trajectory of artificiality* (Krippendorff, 2006) and Young's *levels of design* (Young, 2008).

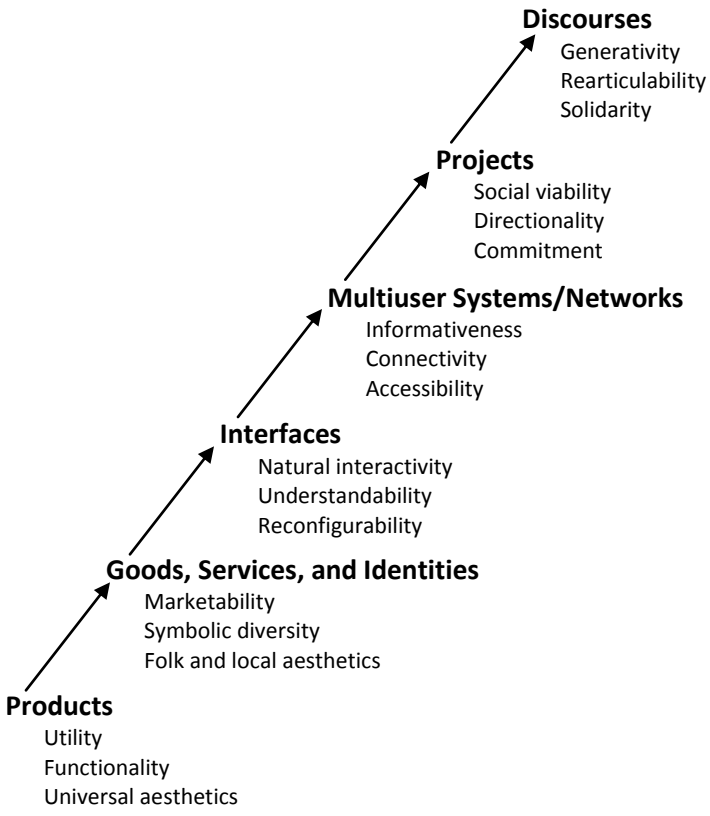
KRIPPENDORFF'S *TRAJECTORY OF ARTIFICIALITY*

Krippendorff's trajectory of artificiality (Krippendorff, 2006) is a design context whose main axis is defined in terms of social involvement and degree of commitment to involvement. Krippendorff, who is a design theorist and not an instructional designer, defines a continuum of user-centered design targets—kinds of "things" that can be designed—that ranges from low-social, low-commitment to high-social, high-commitment. At one end of Krippendorff's continuum are artifacts which do not require personal commitment to social interaction. At the other end are artifacts that cannot perform their function without considerable social interaction and personal commitment. At the most distal end of the continuum lies the designable object through which social interaction within a design specialty is carried out—the discourse. Krippendorff's trajectory therefore asserts both ends of the interpersonal and intercommittedness dimensions of designs. If designers want to increase the interpersonal value of instruction and the degree of commitment it demands from the user, they will focus toward the upper end of Krippendorff's continuum.

As designers mature in their craft, they give new abstract structuring principles priority, while others become less important and therefore subordinate as priorities in design decisions. At different stages of a designer's career, different sets of design purposes can control the structuring of a design, using different design constructs. This is evidenced in Gibbons' (2010) description of the evolution in "centrisms" in the thinking of most novice designers. Krippendorff's trajectory implies that just as a designer's vision of what is being designed can mature in strategic ways structurally, it can mature also in terms of the social and interpersonal commitment dimension.

Krippendorff's "trajectory of artificiality" (see Figure 1) can be interpreted as "a trajectory of…design problems…each building upon and rearticulating the preceding kinds and adding new design criteria… extending design considerations to essentially new kinds of artifacts" (Krippendorff, 2006, p. 6).

FIGURE 1. THE TRAJECTORY OF ARTIFICIALITY (From Krippendorff, 2006)



Krippendorff's trajectory of design problems invites the designer to answer the question, "What kind of thing are you designing?" The trajectory describes a fault line between artifacts that are used by individuals in isolation with little sustained commitment and those that require social responsiveness and sustained personal commitment from the users. Krippendorff's trajectory defines design problems in terms of their social goals: each type of problem defines a particular kind of social relationship between the user of the artifact and others. In this respect, Krippendorff's continuum transcends traditional categories of designed artifact, especially for instructional designers, who commonly describe their artifacts either in terms of mediation (e.g., distance education, blended instruction, Web-based learning), enactment (e.g., simulation, role-play, tutorial), or instructional strategy (e.g., problem-based learning, direct instruction, apprenticeship, simulation). Krippendorff classifies design problems in terms of the degree to which the artifacts created bring people or technologies together in joint activity and by the level of commitment and participation required of them.

Table 1 provides a list of descriptors for each type of artifact on the trajectory. Krippendorff has given new meanings to some common terms (such as project) and has used them as category labels, so special care must be taken to note and remember Krippendorff's definitions.

TABLE 1 **DEFINITIONS OF KRIPPENDORFF'S ARTIFACT CATEGORIES (From Gibbons & Griffiths, 2010)**

KRIPPENDORFF ARTIFACT CATEGORY	KRIPPENDORFF DESCRIPTION	INSTRUCTIONAL DESIGN EXAMPLES
Products	• The end result of a manufacturing process • Designed according to producer's intentions • Intended to be used in a particular way	• "Packaged" instructional modules • Designed instructional systems
Goods, Services, and identities	• Manufactured to be traded and sold • Meant to acquire exchange value • Qualities not of a tangible kind • Concerned with marketability • Possess symbolic qualities that encourage being acquired • Designed to appeal to diverse perceptions and local values • Consumer goods • Possible qualities: stability, dependability, reputation, values	• "Reusable" instructional resources • Online instruction • Service-providing Web sites (Google, Wikipedia) • Web services (Twitter, e-mail) • Productivity tools of all kinds
Interfaces	• Human interfaces with technologies (computers, airplanes, power plants, automotive controls) • Create interactivity—action-response sequences • Create dynamics—changeability over time, end-point seldom same as departure point • Create autonomy—Provide space for unpredictable action by user • Created to extend human action and amplify user's mind • No "correct" usage patterns • Possible qualities: understandability, user-friendliness, transparently, reconfigurability, adaptability, intelligence	• Personal learning environments • Learning management systems • Knowledge management systems • Database tools and interfaces • User interface standards • Virtual reality, user-configurable environments • Collaborative workspaces (Google Docs, Wikis)

TABLE 1 (Continued)	DEFINITIONS OF KRIPPENDORFF'S ARTIFACT CATEGORIES (from Gibbons & Griffiths, 2010)	
KRIPPENDORFF ARTIFACT CATEGORY	KRIPPENDORFF DESCRIPTION	INSTRUCTIONAL DESIGN EXAMPLES
Multiuser systems/ Networks	• Coordinate human activities across space and time (traffic lights, wayfinding systems, signage systems, information systems, accounting systems, communication systems, telephones, computer networks) • Provide a place where people connect, form, and coordinate the activities of their own communities of interest or practice • Designers cannot control how the system is used • Provides facilities that allow users to organize themselves • Possible qualities: informaticity, accessibility, connectivity	• Educational systems (mentoring, some courses, graduate degree programs) • The Internet • Social software (Facebook, Twitter)
Projects	• Form around a desire to change something • Usually a knowledge goal or a cause involved • Require coordination of many people united in purpose (campaign, research, charitable action) • Purpose or goal may be mutable, may evolve • Require designer to address how to achieve cooperation among people • "Attracts" people • Involves language and a narrative (how, what, and when to change) • Must motivate commitment, coordinate contributions, direct activities • Designed by a group or by "the" group (not single designer) • Not controlled by the designer, controlled by stakeholder group • Designer suggests direction, provides space, shows possibilities, attracts resources	• Open learning • Charter schools • Reusable learning resources movement • Participatory design
Discourses	• Organized ways of talking, writing, and acting • Resides in community • Directs attention of community members • Defines "what matters" • Entails tension between reusing established forms and innovating • Place where new metaphors, vocabularies, discourses arise • Involves new ways of conceptualizing the world • Designers derive their identity from community • Possible qualities: solidarity, generativity, rearticulable	• Behaviorism, cognitivism, constructivism, all future –isms • The current movement to reconceptualize instructional design • All of the discourse communities in any professional field, but especially (for this paper) in instructional technology: threads defined as optional interests at professional conferences (gaming, reform, design, etc.)

Krippendorff's categories of design problem are cumulative. Each new problem upward on the trajectory pre-supposes and includes within its scope the previous type of problem. This is best seen by working backwards from the most inclusive category at the far end of the trajectory. Discourses—the most inclusive of the problem types—are carried out through the device of individual projects. Projects operate using the mechanisms of multiuser systems/networks, which in turn require interfaces, which provide goods, services, and identities, that involve the use of products. A designer's job does not involve choosing one design problem to the exclusion of the others as much as it involves climbing upward using the continuum of problems to reach the level of problem that leads to the most powerful and innovative design solutions for a given context and purpose. Designers who think they are designing "a product for distance education" will tend to use the structural constructs that already populate thinking about such designs. Designers who think they are designing Krippendorff's "goods, services, and identities" will find that they need a different set of conceptual tools with which to attack the problem. A similar effect is produced at each step of escalation up the continuum.

YOUNG'S *LEVELS OF DESIGN*

Young (2008) describes a set of "levels" of design "in order to improve the design practitioner's ability to navigate the decision-making complexities of design projects" (p. 562). Young notes that complex problems stall because in reality the decision making required transcends the authority and competence of the design team. His design context defines levels of decision-making, implying that decisions pertaining to each level require a different expertise, authority, and forum of decision makers. At the same time, it also implies continuity among the levels supplied by the designer, who Young shows as the constant and unifying dimension among the levels.

Young's levels are based on the premise that "models of the design process should be more attentive to design content and context rather than just the process being followed" (p. 567). It is from Young's description that the term *design context* is borrowed. Young describes three levels: (1) "design at the level of product configuration and detail", (2) "design at the level of systems thinking", and (3) "design at the level of policy formation and ideology" (p. 570). He relates these levels by describing the first as design (of product) within a context, the second as designing context (the project), and the third as design the design of context (within which the project takes place). These levels, according to Young, allow the designer to decide whether to design within an existing set of resources and constraints or to attempt to modify them by either changing the project definition or by helping to change the context of policy, assumptions, expectations, and/or the goals of the larger social/political/economic setting that has vested interested (and perhaps sponsorship) in the solution of the problem.

Young describes the manner in which levels have been used to map design issues to their appropriate levels, making it possible for the proper design authority to deal with them. This allows the complexities of a given design project to be sorted in a more organized manner to the level of decision-making best equipped and empowered to deal with them:

> *The model demonstrates that the best designs do and always have begun at the D3 [policy] level in order to have a meaningful affect [sic] on issues at policy and strategy forming levels of decision-making, despite the fact that clients, commissioners, and customers or users of designs are seldom prepared to give permission to the designer or design team to operate at a level other than D1, i.e. the level of product detail and configuration (p. 572).*

The effect of applying Young's context should be that "the sphere of concern of the designer is enlarged; consequently D3 thinking around policy issues will become increasingly permissible for designers and design teams, enabling them to act beyond their existing sphere of influence" (p. 572). Young speaks of the "hierarchy to the structure of design problems" (p. 569), observing that cases have been studied where:

> *Decisions had to be taken at different levels in the hierarchy at different times to progress the project and some important design failings were found to have been caused by difficulties in communicating information about the design problems and recognizing their true position in the hierarchy" (p. 569).*

Young refers to a design context proposed by Archer (1987) which consists of levels of design decisions which include: (1) design at the level of decision, (2) design at the level of the product, and (3) design at

the level of the project. By joining Archer's and Young's design contexts together an even more comprehensive design context is obtained which describes additional levels of decision making that must be allocated to a decision maker working at some scope of responsibility and authority constraints.

Young has created a thought tool for determining the seat of decision-making for different levels of design decision and for determining those decisions which must be pushed to a higher level. This constitutes a valuable continuum of design considerations—one that in the past has created frustrations and lost time for designers attempting to firm up the bounds of a project so that productive work can move forward. Use of this design context allows designers to determine expeditiously the problems they can and can't solve and whether to escalate certain decisions or to work within the given project goals and constraints. At the very least, Young's design context makes designers conscious of potential barriers in moving projects ahead and provides a tool for dealing proactively with them. At its best, however, Young's design context creates for the designer a vision of a somewhat larger role which places the designer at the table where decisions are being made that influence the project, giving voice to the factors that will condition its environment.

Young points this out, saying:

> *...This model creates the potential to attend to the future better than the traditional concerns with products and artifacts. That is, it allows us to design the context rather than design within the context. This is of course a highly desirable state to achieve when dealing with complex and emergent social and business contexts, where existing professional thinking and practice struggles to understand the dimensions of complexity that are likely to present themselves in a future, real world context (p. 571).*

Young describes how this brings design into a closer relationship with the larger concerns of society—one that reverses the historical isolation of design concerns of the past:

> *It lends itself to the this new opportunity for designing because it generates a new model of meaning and form that enables the design and the stakeholders involved in social contexts of complex change complex change to better comprehend and debate the levels of complexity and the relative levels of permissions that are appropriate for design processes to address them. The model is, therefore, a tool for facilitating design beyond the level of product, into the more complex level of systems and even more complex level of policy formation with its attendant dynamics of social, economic, environmental, technical and political concern (p. 571).*

CONCLUSION

These examples of design contexts share important similarities: (1) each begins to direct the attention of the designer away from a strictly product or process focus and toward a broader consideration of the designer's role and the nature of the thing being designed, (2) each describes a trajectory of escalating qualities along a consistent dimension, (3) each broadens the scope of what the designer consciously undertakes to design, making it a thoughtful choice rather than a default choice, and (4) each leads to a set of useful abstractions about the nature of design or of designed things and relates them together in a way that rationalizes decisions about them. At the same time, the two examples are quite dissimilar. Krippendorff's trajectory escalates along the dimension of social involvement, participation, and commitment as aspects of a designed artifact. Young's escalates along the dimension of design process, placing into proportion the kinds of decisions that are addressed, or that might be addressed, by a designer.

What is important in the two examples presented is not whether they are agreeable to the judgment of the reader but the notion of *design context* of which they are examples. The importance of design contexts begins with the assumption that what designers think they are designing guides their choice of the design architecture and of the building-blocks they use in their designs. Not only do design contexts help to partition the design space so that design activities become more focused, but as designers think in terms of categories of designed artifact or categories of decision-making scope arranged along coherent dimensions, new design abstractions and structures suggest themselves, and innovation in design is a natural result. The broader vision of what is designed at a deep level leads to revising traditional surface categories, which in turn leads designers to ask and answer new design questions. These continua therefore represent bases for grounding not only the design rationale but the direction of design research as well.

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