

**THE DENIED AFFECTIVE: A DEWEYAN PERSPECTIVE
ON DISEQUILIBRIUM**

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ABSTRACT

It is the position of this paper that the body plays a crucial role in the manifestation of cognition and motivation. Cognition is situationally specific and emergent from a natural, habitual functioning process that is based on the embodied needs to transact with the environment. That natural function is the well-known Disequilibrium-Equilibrium function (D-E f), and the denied affective [the precognitive] is the embodied needs, desires and interests that frame selective attention and are the catalyst for emerging cognitive action. This precognitive catalyst usually contributes more to motivation than cognition. Motivation also has a cognitive component. The Disequilibrium-Equilibrium function (D-E f) process is part of a larger holistic embodied transaction where ‘knowing’ is a way of behaving. This larger embodied transaction is Dewey’s ‘Transactional Realism.’ In this transaction *inquiry* is the tool of the goal *sense* [or equilibrium] and *knowledge* is the product of a transformed context. On an individual level this transformation is learning, enculturation and reflection. On a cultural level this transformation is consensual validation.

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The root of Turing Functionalism in cognitive science

Alan Turing developed the notion of a machine that functioned on the theoretical assumption that any recursive function could be carried out given enough tape data. This notion assumed that all functioning was based on a finite number of basic abstract laws and logical relationships that could transfer to all similar processes equally well. Supporters of Artificial Intelligence believed that a program could be developed using these basic laws of logic such that a machine could function on the same level and in the same way as the human mind. Thus, the human mind could be understood by knowing the abstract basic laws of recursive logic used to process information about the world. This reductionist belief manifests itself in the Artificial Intelligence (AI) and Cognitive Science (CS) hypothesis that we should identify the human mind with the abstract purely logical functions of the “Turing machine.” Conversely, the goal was to show that such a machine could emulate human thought. The assumption being that the function and development of the human mind is independent of the environment and not biased by the body, or its feelings. The result is a completely decontextualized concept of mind that assumes a ridged mind/body dualism.

In 1960, Hilary Putnam presented to the forming field of Cognitive Science a “set of notions” that he felt solved the classic mind-body problem and justified the mind as computer metaphor. Based on the work of Alan Turing, Putnam concluded:

- It seemed that different programs on same or different computers could carry out identical problem solving operations.
- Thus the [executable] “software” could be carried out regardless of the “hardware” [natural body] which they happened to be implemented in.

Therefore, the “logical description” of a Turing machine – held no specific need for physical embodiment (p 31, Gardner, 1985).

Put another way, Putnam concluded that the mind as computer was accurate and functionally complete characterization of thought. The abstract human mind could be described and made knowable without concern for the concrete embodiment, or consideration of context, because all minds have the same “software.” This elimination of environmental considerations and the role of the body along with the tacit assumption of mind/body dualism yielded a form of what we may call Turing Machine Functionalism that became the dominant epistemology of Cognitive Science.

This dominant epistemological base became the assumed view of important Instructional Design (ID) scholars such as Jerome Bruner, one of the founders of the Harvard Center for Cognitive Studies. As the cybernetic approach to cognitive science began to overshadow Behaviorism in the 1960’s, mentalistic assumptions became the norm in Cognitive Science and Cognitive Psychology. Among these mentalistic assumptions was the belief in acontextual mental structures that act like software programs, cognitively structuring sense data. More importantly, this view assumes that

the individuals embodied or emotional needs, wants or desires do not influence these mental structures or processes. Behavior was described as a cycle of disequilibrium and equilibrium between external knowable events and internal cognitive schemas that, through mentalistic processes, allowed the mind to accommodate new information, thereby refining and revising schemas references. Disembodied mental processes that transformed information input into output replaced the Reflex Arc concept in the field.

Decontextualized mind/body dualism and the mind as computer metaphor became deeply entrenched in the field. That mentalistic concepts could not be empirically studied, that the location of the “mind” or “personality” could not be located, or on what basis humans attended to things or events – has not been critically reviewed. Some of the more familiar tenets of Cognitive Science resulting from this background are:

- The level of mentalistic representation is a separate level of analysis – input, transformation and output of symbols can explain human behavior, action and thought
- Human cognitive activity must be described in terms of symbols, schemes, images, ideas and other forms of mental representation
- Mental processes are represented in the central nervous system (pp. 37-40, Gardner 1985).

This Turing Functionalism epistemology assumes that “human like” performance may be equated with ‘mind.’ This “human like” performance is thought to run on the ‘software’ that relies on the formal properties and rules of Boolean logic and may run successfully regardless of body, context, emotional states or embodied needs. Thus, these mentalistic

structures are acontextual and unbiased. This Turing epistemology is not sufficient in its reductivism to define or develop an understanding of ‘humanness’ or to define ‘mind,’ ‘perception,’ ‘understanding’ or ‘intentionally.’

Noam Chomsky and his disciple, Jerry Fodor developed a representationalist position that builds on the Turing machine functionalism. This position relies on the assumption that there are meanings or semantic representations in the mind, that these representations are innate and universal and that all concepts, ideas and meanings are reducible to these semantic representations that are innate, universal and in the mind. These are referred to as ‘mentalisms.’

Chomsky incorporated much of Rene Descartes’ dualistic and decontextualized philosophy into the basis of his own work. Descartes viewed thought [reason] as language – logic as language with complex ideas constructed by simple words and sentences. Thought [reason] as language became Universal reason, that, for Chomsky, meant the possibility of universal language and grammar. Thus, Chomsky viewed Language as he viewed Mathematics – pure, formal and based on a pure meta-logic (a logic outside of any context).

Chomsky influenced Cognitive Science directly and through his disciple, Fodor, with the ‘thought as language’ metaphor. This metaphor reified the idea of the cognitive unconscious applying and manipulating rules and symbols independent of context (Lakoff & Johnson, 1999). Fodor extended Chomsky’s abstract and decontextualized ‘absolute rule’ model of language to the Turing or functional model of the mind. This Chomsky/ Fodor paradigm formed the base of Artificial Intelligence (AI) and Cognitive Science research – that all intelligent behavior [cognition] is rule based, the mind

functions to encode the world and recall representations and rules (Cilliers, 1998). The Chomsky/ Fodor paradigm can also be seen in developmental psychology where the mind as a whole is viewed as a series of acontextual developmental states from birth to maturity with stages consisting of necessary acquisition of knowledge and rules that are transferred to other problems irrespective of context (Sperber, 1989).

Putnam later presented a critique of Chomsky/Fodor representationalism and his own earlier Turing machine Functionalism. Putnam was a teacher of Jerry Fodor and peer of Noam Chomsky. Putnam argument against ‘mentalisms’ and his own Turing Machine Functionalism is as follows

Meaning is holistic: since meaning emerges from complex relationships of interaction you can not establish one simple relationship between a symbol and the thing it refers to. Putnam rejects the reductionist tendency to reduce language to components that can be given absolute meaning. Holism rejects one-to-one representation because representationalism oversimplifies meaning. The rich meaning oversimplified by representationalism refers to the rhizomatic nature of human discursive-dialogic behaviors and social structures [intelligent means-end action]. Rhizome describes a crabgrass-like root structure. Rhizome structures exist in nature. Ants and wasps are an example of rhizomic structure. In rhizomic structures the interdependency is so integral that the part as it exists within the whole could not exist without the whole – the part and the whole have a necessary and contingent process-relationship. Crabgrass, a naturally occurring rhizomic structure, has an intermeshed root system. This root system holds on to the soil and moisture. Each blade being interconnected creates the crabgrass system; thus, each blade has millions of possible configurations with every other blade to

collectively create *grass*, the emergent configuration of all blades. This root structure is used metaphorically by Deleuze & Guattari to capture the infinitely complex and intertwining, emergent social structures formed by human discursive-dialogic behaviors. These richly embodied motivated actions help humans to collectively and individually transact and coordinate within an infinitely rich context. One very significant, but often overlooked, way those intelligent means-end actions help us to transact and coordinate with the infinitely rich context is selective attention. Selective attention is our abstraction of the whole situation or context. Motivated by embodied needs of disrupted equilibrium, the self attends exclusively to the particulars of the context that serve the self's needs, desires and interest. These particulars become so salient that to the self the salient features dominate the context (James, 1890). These salient features are the objects or object-events that become the end in sight (interest) for the self to position itself with or coordinate action (Garrison, 1999).

Likewise, any attempt to design a context will be based on the designer's selective attention. Even attempting to gather enough ethnographic data, though better, will be biased by the person analyzing and implementing the data into a design. Also context can not be controlled or reconstructed. Our concept of 'context' is more like an aura around 'eventful humaness' in constant transaction with the environment. Humans are events. Our holograms of self and environment may be similarly due to consensual validation [culture] but these holograms are also individual abstractions constructed by individual selective attention. In more immersive environment the learning will be more 'experience' based. The learner would be provided with a designed VR environment or put another way, a designed field of action. Within that field of action the learner will

respond and receive consequence for action [as in branching simulation]. We are in a way, designing for the encouragement of specific emotional responses, habits, or relationships between the learner and the object or object event. That should give any designer pause. An example may be our pre-service teachers' VR classroom project discussion. The consequences the designer designs with branching [even if that branching is supposed random] will become some reference point for the learning, in that, learner's development of their own motivation, emotional mind frame, and association between they the teacher and the classroom, student and teaching will be influenced by the simulation. Put another way, the 'space' between the perceived edge of ourselves or the learner and the environment [other humans, events, and object] is where transactions and relationships occur and is what you as the designer are designing. And that 'space' will in some way influence the meaning of the event – in this case teaching. I am not saying it should not be done, or that it is not done in other forms – only that immersive environments will give the designer a larger palette or parameters and control of senses to create experiences for learners. That larger palette is a grave responsibility

Putman's second claim is:

Meaning is in part a normative action: because a meaning can not be distilled to one absolute definition – all definitions hold an assumption or belief about what the meaning is. We have shared systems of belief to communicate but we all have individual interpretations of shared meanings. This action is embodied action utilizing all kinds of creative actions of reconstruction [instrumental, communicative, practical and

interpretive] as the means to transform the world to meet needs and desires by serving consequences through action. This action take place in a unique context or field of action.

Meaning being in part a normative action, means that designing is the creation of normative models, curriculum or experience. Design as normative action is two layered -- firstly as discussed above, design like all technology is the reflection of an individual's or group selective attention, interests, desires and therefore carries a value. Lastly, design carries with it connotations of power. Design, especially Instructional Design, attempts to distill what should, normatively be learned [pre-assessment, content], how these objectives should be taught and measured by agreed upon observable behaviors [objectives, practice and assessment] and what is valid feedback [attitudinal surveys, evaluation]. Thus, the power of design is the power to create expectations of performance in specific contexts. These performances carry with them possible positive or negative affects for the learner. That learner [corporate worker, citizen or student] will be categorized in some fashion as a result of performing the designed task in the specific context.

My concern is that models be seen as sensibilities or guides used by empowered designers concerned with learners and not infallible systematic ways to design, a formula that work regardless of context Much of my concern is based on the William James and John Dewey's idea of selective attention. Selective attention being those things that become salient and important to us in a given context due to our embodied needs, desires, and wants. Selective attention is not confined to individuals or smaller groups. With consensual validation, cultural and field selective attentions dominant perception. All fields have a dominant orthodoxy. When selective attention dominates it become as

James describe them, “teleological weapons of the mind.” A concept is a teleological instrument – it is an essence, an abstraction of something vast so that it can be in a small enough ‘chunk’ to be used by our limited minds. So models and all concepts must be reflected upon as a part, a particular configuration, of a vast, rich context that is specific to the needs, wants and desire of the 'designer' at that time to fulfill the designers purpose. The question is: *does the design satisfy the needs, desires, interest, values and purpose of the user in the users practical context.* Some, configuration work well and we share them in our field and cultures, but they are configurations and nothing more.

Putman’s third critique is that,

Meaning depends on the environment: This insight is targeted at Fodor’s Innateness Hypothesis. Because of the nature of complex interaction and the transformative meanings that emerge for those interactions – the world is not a finished product but an event in process. Changing environments change the referent of logical propositions thereby changing meaning, therefore meaning can not be innate or conclusive. Meaning is not only affected by the transformation of emergence but also by the history of the meaning in the system. Our meanings of a situation or context emerges from the disruption of our habitual way of acting. Habits (1993 Varela, Thompson and Rosch pp. 26, 67, 1999 Burton and Garrison pp. 10, 11, 1958 Dewey pp. 279-281) are socially conditioned, initially unreflective mental intentions and bodily acts that express emotions. Habits are so deeply imbedded that they are usually unconscious and automatic. Thus, habits frame day to day thinking, feeling, perceiving and acting.

Complex interactions emerge from disrupted habitual functioning. From disrupted functioning or disequilibrium, motivated by embodied needs, interests and desires, emerge transactional behaviors aimed at restoring homeostasis. Thus, not only is cognition and motivation context dependent, it also deeply affects meaning and interpretations.

In reflection upon motivation within the Deweyan frame, as the affective component of the disequilibrium – equilibrium function (D-E*f*) originating from embodied needs, desires, and wants, I feel some concern with the notion of motivational constructs in Instructional Design.

Firstly, to say we can measure motivation is, I think, a fallacy. All we are measuring is our selective definition of motivation imposed on others. Secondly, to say someone is unmotivated is a fallacy; an organism is never unmotivated while alive. To say someone is unmotivated is to say they are not presently exhibiting your notion of motivation. Lastly, to categorize individuals as intrinsically or extrinsically motivated, and then to place a value of which motivation is preferred or functions better is to create a single hierarchy for motivation. A cultural configuration which if one does not meet is penalized for. Therefore, notion of measuring and manipulating motivation through the use of construct becomes hegemonic.

The affective has been overshadowed by a focus on the end product – the cognitive action. This is odd because only physical action can transform some situation and restore harmonious functioning. Action is also what is viewed as observable and therefore, ID objectives are behavioral objectives. That focus has led to a neglect in dialogue about the role of the precognitive, selective attention and context in this well-

known function. The following section attempts an investigation into the disequilibrium - equilibrium (D-E f), the role of the affective in motivation and selective attention, the relationship of the precognitive to the cognitive and our relationship to context.

The Denied Affective: The Precognitive/ Cognitive in the Disequilibrium - Equilibrium function and the Teachable Moment or Dewey asks, Can I get a what-what in ID?

The disequilibrium – equilibrium function (D-E f) controls the development of experience. Controlling experience allows us to attend, focus and complete tasks. It is this natural function (D-E f) that allows us to survive as organisms – social organisms. The (D-E f) is a deeply contextually embedded function that has become obfuscated by sophisticated cultural discursive and dialogic behaviors that nevertheless fulfill basic needs, desires and wants for us to survive both physically, socially and emotionally.

This section is based on chapter 4 of Dewey and Eros (Garrison, 1997) unless otherwise cited. Chapter 4 of Dewey and Eros is a discussion of three of Dewey's essays – "Affective Thought," "Qualitative Thought" and "Context and Thought."

For the purposes of discussion, this section contains three subgroups:

Control of Experience

- The background and foreground of cognition
- The Process of emergent cognition
- Motivation

The Teachable Moment

- What is the teachable moment in the (D-E f)

Penumbra

- A description of context
- Learning environments as complex systems

Control of Experience

The (D-E f) works with the body's perceptual systems to control experience. The body's perceptual system refers to how the body's biological frame and sensory systems shape experience by its being the parameters of experience within the environment and constructing, through the sensory system, the biological matrix we know as our environment.

The (D-E f) is the habitual functioning process that guides the body to selectively attend to specific features in the biologically and socially constructed matrix of our environment to navigate and pursue action successfully (Garrison 1997). Selective attention driven by biologically based needs, desires, and interests frames the strategies for action to complete, acquire, consume or solve. This function guides motivation, attention and behavior as seemingly basic as a need to eat; this function guides seemingly sophisticated social and cultural needs, interests, and desires such as the formation of the concept of probability. What may transfer between similar, but different contexts, such as learning are strategies to coordinate effectively with the context or environment (1994, Ceci & Roazzi).

The (D-E f) involves a precognitive component that encompasses disrupted habits, motivation, selective interest, personal history, and sociocultural traditions. Each of these distinctions hone and guide the emergent cognition or strategy for action. The foreground or cognitive describes imagination, cognition, action, consequence and reflection. The precognitive and cognitive within the (D-E f) work holistically to keep homeostasis between the body, its habits of action, and the embodied needs. Homeostasis is physical, emotional and spiritual well being.

Disequilibrium (disrupted habits and unmet needs) signals a tendency away from homeostasis. The focus or guiding force of what specifically will reinstate homeostasis emerges from the precognitive to the cognitive where action and equilibrium are realized. Thus, there is no unmotivated action. An organism is always motivated; the problem is not getting an individual to act, but to redirect action towards learning the curriculum (Garrison, 1997).

The Disequilibrium-equilibrium function (D-Ef)



The following section will discuss each distinction of the (D-E f) using a personal teaching experience as an example. Since I will be describing a classroom

experience of my students I understand that my example is speculation based on observable behavior and verbal feedback from some of the students.

In my classroom example, I disrupted the “speech class” habit. By changing my behavior in teaching, I disrupted my students’ unreflective behavior in learning. The disruption was content – I introduced my undergraduates to Neil Postman. Thus, the “script of activity” (Goffman, 1974) for speech class was changed not allowing them to function on auto-pilot because my teaching was disrupting the habit of teaching. They became unsettled, certainties were dislodged, Postman’s ideas became an indeterminate situation requiring *inquiry* to resolve.

Motivation is easily misunderstood as positioned outside the self. I was “outside” my students presenting “Amusing Ourselves to Death;” but, what I was creating in the classroom was an emotional disruption within my students that students had to position and coordinate themselves with. It was their internal homeostasis that was signaling disequilibrium in an area – maybe a feeling of control or safety. I was engaged in disruptive teaching.

These already active, motivated students were not having emotion “conjured” up within them but were changing the direction of their engagement guided by emotional discomfort. The challenge Postman presented to their perception made them change gears. “Motives, like stimuli, induce us to alter the trend and course of our conduct, but they do not evoke or originate action as such” (Dewey 1989, p. 290). Thus, an organism is always active and stimulated, experience floods over and through living things in the course of actions. For this example, let us say my student’s motivation is to “guide

around” Postman, to guide around the feeling of discomfort that may have challenged their deeply cultural American habit of individual autonomy – the self is not influenced by its actions.

My students focused on what they *felt* Postman was saying about them – their ability to perceive, or be in control or know when someone was lying. My students need to *feel* in control to be able to *trust* their perception to *function well*. How they *felt* about the Postman material controlled their selective attention of the material stemming from the embodied disequilibrium. That felt disequilibrium may have emerged from a threat to the student vested interest in the illusion of individual autonomy as propagated in their culture. They did not seem to focus on his reasoning of the problems, of our resources for information, how media may cultivate assumptions or how we may innately or culturally interpret image and text differently. The students seemed to attend to that which specifically threatened their cultural habit of atomistic autonomy (i.e., the belief that the self is not influenced by its actions).

In sociocultural traditions lay the subtle distinction in the (D-E f) which makes this function both highly individualistic *and* collective. The meeting of embodied needs utilizes the context, especially the community for social creatures such as ourselves. Discursive and dialogic behaviors meet needs and from that emerges culture and collective meanings.

Cultural meanings or consensual validation may evolve larger (D-E f) spectrums or strategies in which individual (D-E f)s operate. Much like individual meaning operates within large, cultural meanings. Thus, sociocultural traditions frame the emergent cognitive action selection. We learn strategies and rule out strategies in

contexts based on a developing and cumulative sociocultural frame. My students overall knew that to walk out or slap me was outside the acceptable frame but to question me or question the ethos of Neil Postman was inside the sociocultural frame of the Virginia Tech undergraduate classroom.

Imagination refers to all the possibilities for action within a context- based on the prior distinctions. This may also be the arena for creativity or “thinking outside the box.” The creative search for a possible action that would restore equilibrium does not hold within it innate values of good or bad, value reside within consequences of the action.

‘Cognitive foreground’ refers to our categories, concepts, essences, identities and rules -- discursive-dialogical tools. For my students, this may have been their social and cultural position, vocabulary choice or ways of positioning me and the material. The manifestation of the cognitive foreground is action. For my students, the action involved questioning, repositioning themselves, raised voices and positioning me in an extreme political category. For this example, my feedback was the consequence, along with feedback from other students. The disequilibrium of Neil Postman’s work was distributed and negotiated through discursive and dialogic practices in the classroom, That negotiation was the loop of the (D-E f) process; if something did not work we all tried something else until distributed equilibrium (an understanding) was more or less established.

The Turing functionalist view limits our understanding of the holistic interconnectiveness as environmental distributiveness of meaning, learning and being. Also, it ignores the normative component of teaching. Postman challenged my students’ web of meaning and values. The potential of recognizing natural functional holism is

shared in various fields. In thinking about the (D-E *f*) it is especially interesting to discuss Artificial Intelligence (AI). AI is attempting to design a functioning equivalent [in some cases] to the human mind. Alison Adams, lecturer in Computation at the University of Manchester Institute of Science and Technology, gives a description of the AI Soar System architecture – specifically its method of searching. Adams’ description of the Soar AI architecture is very reminiscent of the Deweyan concepts of the (D-E *f*) presented in this paper and highlight three vastly ignored components of the (D-E *f*):

1. That needs, desires and interests which are fulfilled by transacting with the environment are the catalyst for disequilibrium and emerging cognition
2. That those needs frame and bias our selective attention to the environment to take the transacting action to fulfill the need
3. That selective attention bias is not only an individual phenomenon but a cultural and field phenomenon manifest in consensual validation and dominant orthodoxy.

Consider the following highly analogous comparisons:

Soar: Intelligent activity is driven by difficulties (Adam, 1998, p. 122).

Dewey/Garrison: Emotion [feeling] is the conscious sign of a break, actual and impending; this discord is the occasion that induces reflection (Garrison, 1997, p. 97).

We cannot place ourselves in doubt at will – doubt is when our habitual ways of acting fail (Garrison 1999, p. 15).

These difficulties are the perceived resistance of the environment to the embodied needs, desires and wants of the individual. The environment is navigated physically, socially and cognitively by behaviors (action) specifically chosen to overcome difficulties (resistance of the environment) to fulfill need (the denied affective- motivation of action).

Soar: A search procedure on a space or set of states which describes a problem, is actually the definition of what it means to solve the problem (Adam, 1998, p 122).

Dewey/ Garrison: “Intuition precedes conception and goes deeper.” Reasoning is a phase of the generic function of bringing about a new coordination between organisms and the conditions of life, and like other phases of the function are controlled by needs, desires and progressive satisfaction (Garrison, 1999, pp. 15-16).

“A problem stated is half solved.” Based on needs, desires and wants we selectively attend to the context and make salient those things that can be transacted with to fulfill the need. Cognition emerges from an organism in need transacting with a rich context. Put another way, the problem emerges from the precognitive to the cognitive – the problem, now an object or object-event, can now be “gotten to” by action. Attending defines parameters of what “is” the context “for statement of the nature of a problem signifies that the underlying quality is being transformed into determinate distinctions or has become an object of articulate thought” (Garrison, 1999).

Soar: Whenever humans are thwarted, especially in small ways, they immediately set up subgoals to overcome difficulty, to be able to continue. This is the familiar pattern of means-ends analysis and subgoaling on operators failing to apply (Adams, 1998, p. 122).

Dewey/ Garrison: The rhythm of loss of integration with environment and recovery of union ($D-E f$) not only persists in man, but becomes conscious with him; its conditions are material out of which he forms purposes (Garrison, 1997 p. 97).

The ($D-E f$) as a function is a process sufficiently complex to involve an arrangement or coordination of minor processes (actions) which fulfill a specific end (needs, desires, interest) in such a way as to conserve itself (Garrison, 1999).

The ($D-E f$) is a habitual function, that functions so as to maintain stable equilibrium. These stable equilibriums on a cultural level become consensual validations or 'knowledge.'

The Teachable Moment

The teachable moment is a pause between disruption, imaginative creation, and action. The teachable moment is when the student can conceptualize the teacher's guidance for equilibrium and follow through on the action coming to equilibrium – adopting the strategy. That adopted strategy will hopefully be a positive selection of a cognitive action, will transfer to similar but different contexts, will be a successful action that will help the learner mature in ability.

One thing that struck me about my Neil Postman experience was how distributed the disequilibrium was. The communication and recognition of the emotions at stake

made the students invest more in the negotiation of equilibrium. They explained things to each other, they stayed late, and they talked about it after several classes. One of the many things the experience left me with was that teaching and the avoidance of teaching theory is a very serious thing. *We want disequilibrium.* We want change, sometimes worldview change, but almost no one wants the messiness of students' emotions, fears, mentoring needs, seized passions and changes of self that come with significant shifts in perspective. The affective also presents serious challenges to design of instructive experiences.

Penumbra

Context is a word so common to our field that outside of our own perception of “situation,” or assumptions that context can be designed or controlled we rarely reflect on context. William James, who influenced both John Dewey and Lev Vygotsky, saw context as an infinite, rich flowing stream. Dewey uses words such as “buzzing” and “blooming” to describe context. What both James and Dewey are attempting to describe is unbiased context – “all parts at once without emphasis” (James, 1980 p. 333). Context unfiltered by the situational configuration, the physical perceptual system and our own selective attention that renders the image of what we commonly refer to as context (Garrison, 1999). This understanding of what unbiased context may be lead to three very important insights by James:

1. The mind is not a substance, but rather a function
2. There is no property absolutely essential to any one thing
3. Reasoning is always for a subjective interest, to attain some particular conclusion (James, 1890).

Experience is the hologram of interaction, transaction, coordination and exchange between the perceived edges of our bodies and the environment. You and I are events – rendering events. Like carrying a lantern on a very dark night, we render [by the body’s configuration, perceptual system and our own selective attention] what our context of action is, and our own cognitive self awareness (Lakoff & Johnson, 1999, Garrison, 1999). The locus of these renderings is within our interactions with each other and the context.

Complex Adaptive Systems: Moving away from a self-limiting view

This paper offers a view of the learning environment as a complex system – Complex Adaptive System. A Complex Adaptive system is an *open system that [is] environmentally co-evolutionary and based on internal emergent and self-organized processes* (personal correspondence Doolittle, 1999).” The boundaries between system and the environment, systems and systems or part and the system are really only functional distinctions. Described so because boundaries are so membranous and the sites of continuous exchange or transaction. “Co-evolutionary” refers to the relational effect each system or part has on another system, part or the environment. Since boundaries are membranous distinctions a change in one part of a system disrupts or creates disequilibrium in the whole system. Thinking of a classroom as a Complex Adaptive System (CAS), one individual can affect the functioning of the whole class. Likewise, one system can disrupt another system or a whole environment. A tragedy for one person in a school can disrupt the whole school or a tragedy at one school can create

disequilibrium and change in a whole school system. Emergence is something that occurs as a result of interaction or relationship between parts of a system. For a system to have internal emergence “the locus of meaning is within the process of interaction (Ingalls 1999).” Emergence always positions the locus within the interactions of parts of a system or within the interaction of systems. In thinking about classrooms, emergence is formed by the action of discursive and dialogic behaviors. The ability of complex social systems, like learning environments, to manifest emergent meaning through discursive and dialogic behavior means that the fullness of context can not be broken down into parts.

Emergence is also by nature, transformative, since the meaning, identity, relationship or concept is new to the system it requires the system to reconfigure. A good example of this is a change in definition. Change the definition of the word “marriage” and you reconfigure society. Likewise, emergent meanings and roles in the classroom reconfigure that unique classroom system. For the purpose of this paper, self –organizing processes refers to the part (individual) or system (social system-classroom) coordinating with the environment. Processes with our environment (eating, walking, driving, communicating, and calculating) are processes in which we coordinate transactions to receive what we need – be it tangibles [like food] or nontangibles [like successful communication, navigation of a car, or a solution]. We individually and collectively coordinate with the perceived environment to meet needs. Survivability is the ability for a part (individual) or system to spontaneously and optimally adapt to the perceived environment.

Turing Functionalism, as described above, manifests itself in ID (Instructional Design) due to its reliance on Cognitive Psychology especially the versions developed by

Piaget and von Glaserfeld. Instructional design therefore, depletes context by a purely cognitive, mentalistic definition of disequilibrium. This atomist view of cognitive functioning separates the body (sensorimotor, affect) from cognition, thus creating a mind/ body dualism and an inability to locate mind. Research and design is not focused on the *transformation* of context by *inquiry* which is ‘learning.’ The irony being, that we are comfortable with behavioral objectives to observe/verify behavior has occurred, but the field overall seem uncomfortable to acknowledge that ‘*knowing*’ may be a behavior and *inquiry* a tool to transform context to a stable functioning sense (Garrison, 1994). The locus of transformative-inquiry is in transactions. Transaction is commonly described as discursive and dialogic behaviors between humans, but encompasses all transactions between the perceived distinction of the self and the environment.

Ernst von Glaserfeld interprets Piaget and his own theory of learning as a two-level “theory of [psychic] schemes.” This theory includes a physical, fully contextualized sensory-motor component that describes instrumental action. This action achieves goals and interacts with the environment [context]. The second component is reflective abstraction or operative schemes. These schemes are ‘software’ programs or mentalistic structures that structure “sense data,” described by von Glaserfeld as path of acting or thinking. von Glaserfeld calls this second level “epistemic,” it closely resembles the “mentalisms” of Chomsky and Fodor. In both Piaget and von Glaserfeld the Turing metaphor emerges that is, the idea that the body only runs acontextual mentalistic “software” programs and so the body and its needs, desires and interests do not directly affect cognition (Garrison, 1997).

Disequilibrium, in the above sense, is usually described as “cognitive disequilibrium;” it involves a need to make sense of the world. Something happens that creates “cognitive discomfort” – an unprecedented event that cannot be explained by current mentalistic schemes, therefore the new event must be assimilated or accommodated by expanding or revising the “internal” mentalistic programs, cognitive structure, or schema, on the processed information. Thus, functioning is processing the environment, “making sense” of it, but is something processed independently of the external environment. This view can be seen in Instructional Design when it sees a group of individuals executing mentalistic functions, or processing received information with clear objectives and practice that can in turn be evaluated in a decontextualized way because the evaluation matches the objective or practice.

The Turing machine metaphor can be seen in Instructional Design (ID) in the reductionist goal to break down learning or components of learning into atomistic “bits.” This attempt to break down learning can be seen in decontextualized traits, attributes and hypothetical constructs that attempt to categorize learners, assess ability and become acontextual variables to manipulate across contexts in design to affect learning. Overall this approach to learning diminishes the role of the body, embodied needs and affects of context on cognition. Put another way, the software (executing functions) has been written and practiced and can function with similar information (transfer) minus concerns about the body (and its feelings) or the context of action. Thus, context is generic and partially predictable with learner assessment, subject matter experts and instruction. Context has some position in ID, but the influence of context is seen as trivial. Cognition is not viewed as dependent on the specific context of occurrence. “Thus the overriding

message in developmental theories is that, if one is to get at the essence of development and chart the trajectories of various processes, then context is a form of noise to be controlled, defeated or covaried ... context is viewed as an adjunct to cognition rather than a constituent of it (1994, Ceci & Roazzi pp. 74& 75).

If disequilibrium is merely cognitive “mental discomfort” which spurs me to “make sense” – what *motivates* me to “make sense” of the world? Why do I care, what is my vested interest or what relationship do I have to this unprecedented incident that motivates me to make sense? Do we simply assume that we innately desire to make sense because sense is void in a situation? If so, what does “innate desire” mean; why is the desire for sense innate? How do I “make” sense, what system do I use? With what do I probe the environment to “know,” and with what and how am I in relationship with the environment to “know” when I am in equilibrium or disequilibrium? Where and what is intentionally? If intentionally is our determination to act, what causes action? Can action be anything other than motivated? If computers cannot display intentionally (Adams, 1998), then we cannot design intentionally and if intentionally cannot be designed it is not a rule or computation. These questions point to problems with purely cognitivist descriptions of disequilibrium. *They severely deplete context, ignore the body and neglect the affective and environmentally relational aspects of disequilibrium and therefore learning and motivation.*

What might disequilibrium be in an embodied complex system? Disequilibrium, in this sense, is more than Cognitive disequilibrium; it is both *cognitive and affective*

disequilibrium that is not only deeply embodied but also distributed. It is the disruption of embodied habits of functioning. These habits involve emotions. When functioning is seen as transactional the affective motivation of disequilibrium naturally follows. Functioning, in this view, is transactional. We transact with the environment as a system interacting in and within another system. The boundary between us, each other and the environment is only a methodologically useful distinction, not a dualism of existence. Functioning being transactional focuses our dependency on the environment. Context is infinitely rich. “The locus of meaning [is] within the process of interaction” (Ingalls 1998, p.1), the locus of transaction is within the process of coordinating with the environment.

Homeostasis is not of an external event and a mentalistic schema, but an organism with motivations stemming from real physical, affective, and social needs that require transaction with the world for the individual organism to survive. Our survival and growth is made up of physical, social and emotional transactions. My cognitive performance as a graduate assistant not only fulfills social needs of affirmation and belonging, but also puts food on my table. My investment is not only these current needs, but increases my ability to have profitable transactions in the future. Thus, disequilibrium is motivated by physical, emotional and social needs or embodied needs. Interests are directed by desires, needs and wants and interest. In a complex system, when one part of the system is in disequilibrium the entire system is in disequilibrium. Disequilibrium is distributed. Because the locus of meaning and functioning is within a larger interaction, all parts of the system affect all other parts, and systems affect systems holistically.

If you break your foot, it is not only your foot in disequilibrium, but your whole body, schedule, events, responsibilities maybe family and peers. Likewise, one member

of an organization can have tremendous effect on the whole organization, one dominate hierarchy affects a whole system.

Overall, one thing is very clear or “in the air,” meaning that several very different camps are gravitating, at different speeds, to a very similar overarching conclusion – context matters and seems to always matter more than we assume. Be it Cognitive Constructivism, Cognitive – Development, Embodied Cognition, Social Constructivism, Radical Behaviorism, the Deweyan Social Behavioral perspective, or a combination of any of these – context is important and seems to be uncovered as more so as we attempt to understand its complexities. *It is the Deweyan perspective of this paper, that learning cannot be understood outside the environment of the learner the environment constitutes the learner.* Consequences within context [field of action] alter habits and in doing so alter self [learner], the self [learner] ,in turn, *transforms* the context. Thus, the role of context in learning and as an issue for research and design is a continuous reflection.

Application and concluding thoughts

In my conclusion I would like to attempt to show how the (D-E *f*), as explained in this paper, fits into the larger naturalistic, functioning process of Dewey’s Transactional Realism (TR). My reasoning for incorporating Dewey’s Transactional Realism (TR) in this summary is that (TR) naturally follows as a learning theory in a discussion where the Deweyan (D-E *f*) serves as motivator and sense-making [selective attention] coordinator.

The roles, relationships and distinctions made between the (D-E *f*) and (TR) are only distinctions for discussion. The (D-E *f*) and Dewey's Transactional Realism (TR) have a necessary and contingent relationship within a complex system. This relationship categorizes processes into the functional or structural description based on the need of the discussion. Structure and function, by nature, render and depend upon each other, and are no more able to be pulled apart than stimulus and response in a dynamic context.

Structure, for the purposes of this paper, describes functional organization [resolving the disequilibrium – e.g. (D-E *f*)]. Function, for the purposes of this paper, describes the transformative/transactional process of inquiry. This is the Deweyan instrumentalist view of inquiry. Inquiry is the 'tool' that transforms context. Knowledge, the product of inquiry, creates a stability of transformed context called 'perception' or 'cultural perception.' Thus, on an individual or group level (TR) is learning, and enculturation. On a cultural level (TR) is knowledge, culture, and control of inquiry.

This is not as inapplicable to ID/IT as it may seem at first blush. The focus is on the transformation of context by inquiry [learning] that is carried out by transactional discursive and dialogic behaviors and evaluated by observable behavior.

This concluding section is as follows:

- Dewey's Transactional Realism (TR)
- Transforming context and general issues of context
- Problems of privileged context
- Closing thoughts

Dewey's Transactional Realism

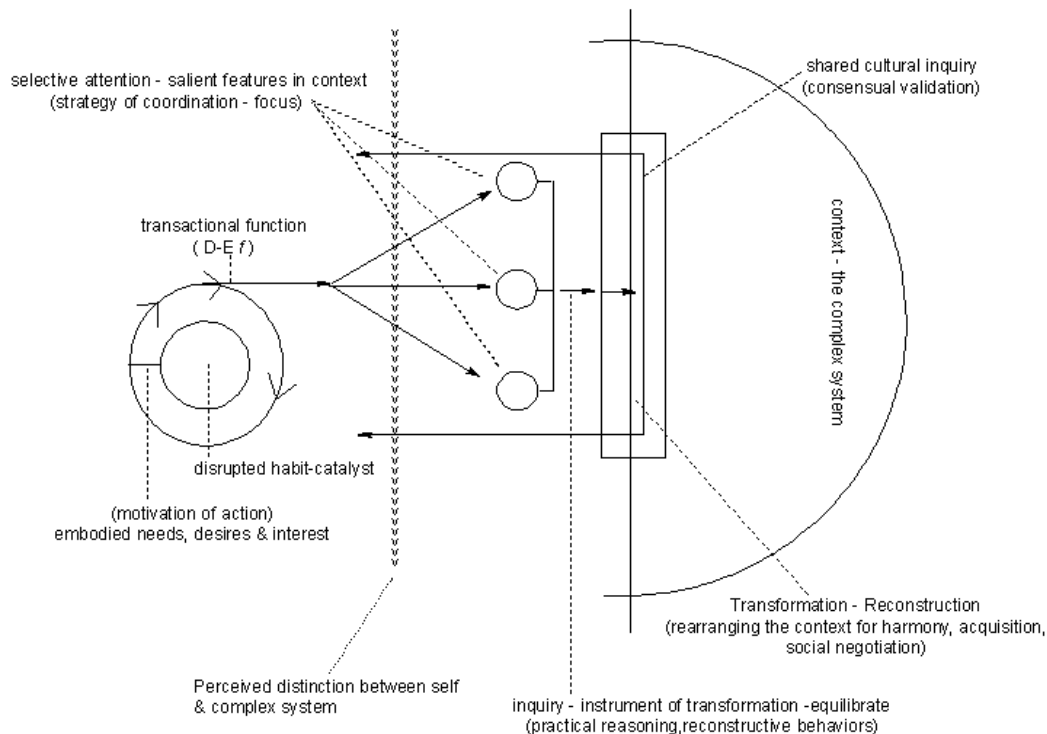
Realism, Deweyan Pragmatism, and Educational Research (1994, Garrison)

Dewey's Transactional Realism is an instrumentalist view of how humans transform context and themselves with inquiry. This view is part of Dewey's holistic outlook – of seeing the world as a complex system with organisms transacting with other organisms and the system to survive and grow. Dewey's view of organism-system transaction is *co-evolutionary*. Just like the description used earlier in this paper of Complex Adaptive Systems, to offer a different view of learning environments, Dewey saw this transformative transaction of inquiry not only transforming the system but the organism or agent (7-9).

In (TR) essence or knowledge is created by inquiry. This is an instrumentalist view of inquiry. In reference to the decentered process of my chart, transformation is an action for an organism to equilibrate. Disrupted habits manifest within the agent as embodied needs, desires and interests -disequilibrium. This embodied disequilibrium motivates and guides the configuration of the selective attention, what is biased as salient in the context. The selective attention, in turn, becomes the end for the means of inquiry. Inquiry is the 'acting out' or the action to carry out the fulfillment of equilibrium. Going back to my earlier example of teaching Neil Postman's work to my class, those loops of inquiry were the use of question and answer, expressive emotion, and discussion of ethos. The 'tool', inquiry continued to operate until distributed equilibrium was established. Put, another way, the 'tool' continued to work until consensual validation was negotiated.

After which the context of class and the student's relationship to the class was transformed. Perceptions and concepts and relationships were transformed. Experience and knowing changes us individually and collectively because inquiry changes perception – our contexts of the world (7-9).

Dewey's Transactional Realism



On an individual level this process of (TR) is I believe, learning, communication, enculturation and knowledge. On a social level this process of (TR) is socially shared knowledge, knowledge production, consensual validation, history, culture, and control of inquiry. This social level includes the socially negotiated constructions that allow for communication, agreement and collective prediction. That our perception and contexts are transformed by inquiry can be seen in historical perspectives and technology (8,9).

We may not all agree that humans progress, but we can all agree that cultural perspectives and transformation of physical place changes as a result of human creativity or human inquiry. These changes in turn, change humans. Humans continue to modify these changes. Technology could be seen as the physical manifestation of the contextual change of inquiry.

It is an investigation and acknowledgement of the possibilities of these transformation ‘places’ in learning that I feel need to be reviewed for educational research and design. It is also the teleological nature of inquiry changing context that I feel need to enter the dialogue of research and design. The closing two sections are my attempt to explore current research that may be relevant to exploring these questions.

Transforming Context

*Constructivist, Emergent and Sociocultural Perspectives in the context of
Developmental Research* (1996, Cobb & Yackel)

The authors (Cobb & Yackel) present a discussion that explores the merger of psychological constructivist [Cognitive Constructivism] and sociocultural-emergent-interactionist [Social Constructivism] perspectives into a working holism. This paper wishes to acknowledge the authors’ intent but does not agree with Cobb & Yackel’s belief that the construction of an individual’s mind is, in any way, mentalistic or invisible “cognitive constructs.” I view mind, self, and other as social constructions through

dialogic and discursive behavior that is biologically based on habits. This paper's intentions on exploring Cobb & Yackel's works is two fold. Firstly, to discuss the research needs and roles the researchers found could only be fulfilled using the Social Constructivist paradigm [that is compatible with the Deweyan perspective]. Secondly, to focus on how the changed classroom social norms and practices changed relationships, transforming context and thus, disrupted habits, vested interest and motivation within the classroom context.

The authors, Cobb & Yackel, originally intended to pursue their interest in student and teacher development within individual psychological terms. As the authors developed a classroom based research project they found they had to abandon this position and adopt the Social Constructivist framework (Cobb & Yackel, 1996 p.175). The authors researched ways to increase math skills and issues contributing to the development of math skills. As the researchers investigated classroom interaction and discourse – socially negotiated constructions appeared as the defining element in the process of learning and development. Cobb & Yackel write, “We consider student's mathematical activity to be social though and through because it does not develop apart from their participation in communities of practice”(180). Classroom participation resulted in socially negotiated construction that disrupted students habitual ways of performing is referred to by the authors as instructional sequences (180). The authors discuss the desublimation of instructional sequences as the students and teacher participation in the sequences. This was described as talking about math [what is a valid solution, what make a solution valid, sharing solution strategies] and talking about talking about math [teacher is not the center of knowledge, encouraging discussion, why we want

to discuss solutions]. Thus, seen another way, these instructional sequences disrupted traditional classroom roles [teacher as the center of knowledge and student answering the question, predicting the teacher wants] to a role as a class reaching consensus with distributed ethos. The change in relationships between student and teacher or student and student was significant. These role changes also affect, I believe, the vested interest in the class and therefore the needs, interests and desires [motivations] fulfilled by the class – possibly changing the children performance in the class.

The researchers discussed and reflectively used instructional sequences to increase mathematical skills in students and to encourage reflectiveness in the teachers developing curriculum. These instructional sequences were desublimated through qualitative methodologies and interpretive reflection. The authors questioned the assumption that individualistic focus can in and of itself capture individual conceptual understanding independent of situation and motivation (184). Cobb & Yackel indicate:

The individual variables of traditional experimental research are relatively superficial and have little to do with either context or meaning. Such approaches are difficult to justify if one follows Lemke [in press] and considers that the ecology of the classroom is semiotic and involves meaning-making in which one thing is taken as a sign for another (180).

Cobb & Yackel go on to describe the learning environment as “ecosocial” (182) where students and teacher jointly contribute and reconfigure the environment by social negotiation. These negotiations structurally – enable or constrain participation and

practice and thus, create learning (180). Put through our Deweyan lens, Cobb & Yackel has documented for us: Distributed disequilibrium reconstruction, and equilibrium or put another way, a self influenced by its actions. Cobb & Yackel's approach included the evaluation of consequences in context and the acknowledgement that these consequence, the reflection of the consequences and the meaning of the consequences are context depend, specific and transformative - put another way, inquiry. Yackel describes the transformative learning interaction as 'inquiry' (Yackel, 2000).

Relationships change, habits are disrupted, and reflection encouraged when the role of the individual student became being a member in a "community of validators" (179). Allowing students to reflectively desubliminate how meaning is made – their meaning encouraged the students to become more critical. This has, I believe, emancipatory affects. The students began to critically evaluate "claims established by means of mathematical argumentation rather than appealing to an authority such as that teacher or a textbook" (179). Students in Cobb & Yackel's research observation had to justify and explain interpretation and solutions these interpretation were, in turn, discussed by the teacher and the class. Students came to a meaning of what a significant contribution to class was along with a concept of a valid mathematical solution in classroom discussion guided by the teacher. Students who worked ahead of the class average level explained and justified their interpretations – many of which became established practice. It is interesting to note the word "work" has not been used – in the sense of student's owning their work. In their research, student shared and created emergent meaning through negotiations. Meaning that may not have been collectively reached in a classroom communicating only the teacher desires with the teacher and text

as ethos. The vested interest as contributors, the interdependence among peers and the empowerment of the children as valued sense makers was significant compared to the traditional class.

General issues of research

Streibel's concern about place and acknowledgement and realization that "no real culture can exist in abstract only" (Streibel, 1998 p. 418) can be used as a reference points to these researchers experiences. Learning can not be known in abstraction alone. Cobb & Yackel (1996) uncovered the "particularist conjoining" of embodied experience and social negotiation that created learning math for the children and teachers they observed. By observing and reflecting on this "cojoining" or framework of coordination and construction starting with our experiences of physical place (Streibel, 1998) the authors desublimated rhythms or instructional sequences that encouraged math skills. Cobb & Yackel's paper brought two larger concerns to the forefront in dealing with Educational Research; the pedagogical power of selective attention and the devaluing of context the leads to assumed decontextualized pursuits of understanding learning.

In following through on their objective of teacher development the authors asked teachers to reflect on and try to desubliminate the question *what does it mean to be a child in this school?* They authors were surprised by the affect of the reflection. Overall teacher began to see that the notion of *what does it mean to be a child in this school*, was context specific and not fixed. The notion was influenced by their perceptions of what the experience should be and was also influenced by the teachers intellectual and social concerns for their students (180-183). The authors also found overall that these teachers were more open to try and consider progressive classroom strategies as a result

of their reflection. The disruption and reflection of the teachers' concept of class resulted in a changed perceptions and new habits.

The acknowledgement that *what does it mean to be a child in this school* is constructed by the participants in practice or the discursive and dialogic behaviors of the member of the pedagogical community reflect the need to reflect upon our professional experiences. Our own selective attending biases all of our work and it is necessary for this to be reflected upon so that the perception does not become naturalized and mistaken for *the way it is*. Cobb & Yackel saw how the answer to the *question what does it mean to be a child in this school* structured the experiences and perceived ability of children because the answer affected the “ecosocial” arena the child developed in. The teacher has profoundly more affect in the context of the classroom; much like a designer has a profound affect on the design. The transactions [actions] of the child or learner in their field of action [context] will affect the identity of the child in that context. Designers and teachers affect transactions in their contexts of power. These are fundamental concerns where the production of knowledge and the power issues of socially negotiated identity, role and place of other are acknowledged (Desautels, Garrison & Fluery, 1998).

Concerns of privileging the abstract over the concrete are discussions of what is constructed when our bodies and contexts are devalued (Streibel 1998). Even our assumed decontextualized “places,” technical “places,” or operationalized “places,” are contexts that construct something specific to that place. Though we try to abstract place or privilege our abstraction of “placeness” place can not be abstracted. Place is another “self” that we transact with that give us bearing and is the collective location to objects, object-events, histories and meaning we transact with. That is why “this happened here”

matters, and that relationship may be why cognition is a context specific phenomenon (Basso, 1996).

Traits and aptitudes used for ATI [aptitude –treatment-interaction] or [trait-treatment-interaction] attempts to measure some variable [construction] of a variable with some trait or assumed trait [cognitive process] (Moore, Wilson & Armisted, 1986 DiVesta, 1975). Reviewing Clark’s taxonomy of attributes, traits & aptitudes through a Deweyan lens show that at best, trait(s) and aptitude(s) are just the researcher selective attention biased by the researchers interest (hypothesis) of a specifically unique though highly constructed context (operationalism) in which some simplistic relationship (causation) could be assumed to take place in that specific context viewed through that researcher’s selective attention. This researchers selective attention is biased by the field’s collective orthodoxy of viewing the phenomenon. My attraction of utilizing ethnographic methodologies, as Cobb & Yackel did, is that even though none of us can escape our selective attention, at least interpretive ethnography attempts to “give voice” to the researched group. This methodology also recognizes the researchers biases, can empower people with the opportunity to reflect on our various roles in construction and is a methodology within the construction and therefore not attempting to deplete the context (1990, Van Manen).

Problems of privileged context

The effects of context of cognition: postcards from Brazil (1994, Ceci & Roazzi)

This section discusses the specific issues of cognitive transfer as it may relate to context.

In the journal *The effects of context of cognition: postcards from Brazil* (Ceci & Roazzi, 1994) the researchers were interested in investigating to role of context to cognition. These researchers attempted to evaluate and compare cognitive skill acontextually [skills outside the normal contexts for subjects] and then evaluate those same cognitive skills embedded in the learner's normal context of performance. The abstraction of the cognitive skill is assumed consistent over contexts [ex. mathematical skill] the comparison was between the contexts the skill was performed in. The roles of context as researched by Ceci & Roazzi lead to the authors following conclusions:

- Cognition is a situationally specific phenomenon
- Transfer of learning across contexts appears to be very limited
- Analogies or isomorphs did little to encourage transfer

There is a new look in memory development research, and it is decidedly contextual. The crux of the current view, in fact, is that memory processes cannot be adequately understood or evaluated acontextually (Ceci & Roazzi, 1994 p. 75). *Knowing how well individuals can solve one problem is little help in predicting how well they will solve the same problem in another context, even when it is isomorphic to it* (Ceci & Roazzi, 1994 p.83).

These finding may point to our relationship with the context – our coordination; transaction and subjective understanding based on our sensorimotor relationship in the environment (Lakoff & Johnson, 1999). Another way to think about this “positioning” relationship is cues. “On the contrary, a modest body of evidence suggests that place-making [our understanding of place or a place] involves multiple act of remembering and imagining which inform each other in complex ways” (Basso, 1996 p. 5).

If our cognitive ability is this hard to transfer over context, and if the development of ability is strongly context dependent then issues of ‘privileged context’ come to mind. Though we may have abstractions of context or more abstract contexts – there is no such thing as a decontextualized space just different contexts. So, the findings of Ceci & Roazzi and the insight of Stribel and Basso pose a fundamental problem to the cognitive categorizing of subjects, use of standardized tests and pre-assessment. For when are we really measuring ability and when are we really privileging a specific context and performance in that context? Also because of the issues of selective attention for the designer, the use of cognitive constructs for categorization of subjects, standardized testing and pre-assessment will always carry with them the fingerprint of their [the designer’s] or the clients privileged contexts of -- in what ‘places’ individuals should be able to perform what ‘tasks.’ Usually in good design the learner learns, practices and is tested in the same general context. But educational research still uses categorizing constructs and to review this procedure as possibly privileging performance in a specific context is disconcerting, because we may not be getting at ability at all only configurations or context specific strategies.

Closing thoughts

One thing that has struck me in the formation of this document and in conversations with my professors; is that ID is not the model but the designer. Sometimes in the commodification of knowledge into corporate approved curriculum we forget the art in a field in our pursuit of knowledge in that field. ID is a sensibility [utilizing years of experiences as teacher, student and designer], practiced in design utilizing technologies and strategies for learning. Thus, the designer always brings her or his context, and emotion (e.g., perceptual and cultural bias) not just clear abstract 'knowledge' to the design. "ID may be better characterized as a creative process, based on intuition as well as rationality, involving divergent as well as convergent processes" (Rowland 1993). This may seem like commonsense to the expert, but the novice may need to be reminded that ID is a balance of Cognitive/learning theories, instructional strategies, technical knowledge, specific client/learner needs and contexts and the designer's own context. Technologies are things we use as means to ends. Ends are something we desire they are values. Hence, technology and curriculum is never value neutral. Design, by the very nature of its [instructional] goal, *utilizes the position of the other* with a means as consequence. Instruction is an alignment of behaviors, beliefs, assumptions and sense making. Instead of avoiding our selective attentions as designers, focusing on systematic models – we should view models as sensibilities embrace and recognize our intuitions and pursue knowing the position of the other and specific learning needs in specific context. Thus, the importance and elusiveness of rich context naturally develops into a discussion of designer sensibilities, and possible research needs. These discussions not

only can contribute to the refining of existing models but also to the designers own growing awareness of the impacts of design.

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Special study: 80 hours completed in film and video curriculum at Georgia State University

Conferences: Presented paper at the Society for the Study of Symbolic Interaction (SSSI) Annual meeting 1999

Life Online: Investigating lived experiences in cyberspace
Organizer and Chair: Dr. Markham (Virginia Polytechnic Institute and State University)
Autoethnography presented: "Understanding self and other in an online classroom"

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G.A. Experience

Blacksburg Electronic Village, PTFP Grant, Blacksburg, Virginia,
January 2000–Present
Research Assistant

- Present model justification and implement a Front End Analysis for a PTFP grant
- Support PTFP team in project management and public relations
- Organize and document client interaction

Virginia Polytechnic Institute and State University, Educational Technology Lab, Blacksburg, Virginia,
August 1999–December 1999

Housecalls

- Part of the Technical support team for CHRE faculty and staff
- Support Instructional Technologies Department with design and revisions to the IT web page
- Support Instructional Technologies faculty with specific class technology needs

Virginia Polytechnic Institute and State University, Department of Communication Studies, Blacksburg,
Virginia, August 1998–August 1999

Graduate Teaching Assistant

- Taught Public Speaking (2 sections fall '98, 3 sections spring '99, 2 sections I summer session '99)
- Creating Graduate Web page for Communications Department

Multimedia/Video team Experience

IBM Corp., Multimedia field office, Cleveland, Ohio, January 1994–March 1995

Graphic Production

- Assisted in design treatments and bids
- Creation of graphics for multimedia applications
- Created logical flows for design of application functions

IBM Corp., Multimedia Hdq., Atlanta Georgia, February 1992–December 1993

Production Coordination

- Supervised production and post-production for internal and external customers
- Conceptualized scripts and storyboard ideas
- Performed digital editing of AVS files using D-Vision workstation

Ernst & Young Multimedia Hdq., Cleveland, Ohio, March 1995–July 1995

Graphic Production (freelance)

- Design and creation of graphics for the IPO/DTL Module One
- Supervision of the workflow of two other graphic artists on IPO for consistency and to maintain timetable expectations, assistant to Instructional Designer

Reider/Walker Association, Atlanta, Georgia, February 1990–December 1993

Production Coordination (freelance)

- Supported multimedia projects by providing consultation on hardware, software, vendors, and technical production methods
- Performed analog editing
- Assisted the stylist with production and various support needs including audio support and continuity

Print Experience

Dawson's Printing Memphis, Tennessee November 1995–July 1996

Pre-Press

- Dupont Print shop
- Troubleshoot and output clients' files, imposition of jobs, basic typesetting, and graphic duties
- Output to Crossfield Imagesetter, creation of watermarks, and general client interaction

Central Imaging & Printing Memphis, Tennessee August 1995–November 1995

Pre-Press

- Linotype-Hell Chroma Graph S2000 scanning and color correction
- Basic typesetting and graphic duties
- Output to Linotronic 330 Imagesetter, creation of contacts, and general client interaction

Pepperite Co. Inc., Memphis, Tennessee July 1995–August 1995

Digital Pre-Press Training (freelance)

- Trained Pre-press graphics person in the fundamentals of Photoshop 2.5, QuarkXpress 3.2 and basic use of Illustrator 5.5
- Volunteer work: Created PSA for FairHaven Inn, Battered Women's Safehouse, Atlanta, Georgia

