

In the Swerve: Transforming identities in the design studio

This paper examines and challenges current developments in design pedagogy that have been stimulated by the evolution of fabrication technologies available to design practitioners (including students, educators and professionals alike). In particular, this paper will address the use of laser cutters and CNC machines (and their companion software) as the conduits for exploring design thinking. Drawing on the shifting conditions of present experiences and the shared concerns of instructors and students, we assert that in optimized contemporary learning environments, design students inevitably become educators and design educators become students as they navigate this shifting terrain together. This shift is stimulated by changes in tools and advances in materials that result in broadening explorations of theory and effective approaches to practice. "Becoming" in the design studio is a necessary state of being, in mind and with hands; an unconditional condition. We propose to examine this emerging type of pedagogical setting because we believe new tools and technologies embody particular notions of transformation, subversion and promise that are to the benefit of interior design education.

Conclusions drawn and shared in this paper are the result of our analysis of a series of existential phenomenological studies of students' outcomes and experiences in the design studio. Evidence includes anecdotal information from student evaluations, external reviewers' comments on studio projects, and dialogue between student and professor. This research method, with steps articulated by von Eckartsberg and applied to environment and architecture by Seamon, supports the reliance on the experience of specific individuals and groups involved in actual situations and places to communicate meaningful insights that can then be applied to and tested in future situations.¹ The existential phenomenological process includes four steps: (1) articulation of the phenomenon; (2) collection of descriptive accounts of participants' experience of the phenomenon; (3) careful study of the accounts to seek underlying patterns or commonalities; and (4) presentation of findings.² In this paper, the phenomenon studied is "the swerve:" exchanges of identity between teacher and student, and between work and play, as in each case, one becomes the other and then unpredictably swerves back again. Digital fabrication technologies become the vehicle that facilitates the shared learning experiences of all participants when all is new and outcomes can only be imagined, not expected.

Most design educators and students expect an integrated digital design agenda as part of the studio experience. Our search for a new and balanced framework for conceptual and formal design exploration is set against the responsive and allusive nature of digital technologies. Perhaps it is sensationalizing to assert that innovations in technology create a particular crisis of identity where the established roles of instructor and student are concerned and that this "crisis" has implications for the fate of specific disciplinary identities, yet it is in this challenging of who we are that we are provided an opportunity to establish the potential of who we, as a profession, wish to become.

¹ David Seamon, (2000). "Phenomenology, place, environment and architecture: a review of the literature." Retrieved from <http://www.environment.gen.tr/environment-and-architecture/113-phenomenology-place-environment-architecture-a-review-of-the-literature.html>, Retrieval date January 28, 2012.

² Rolf von Eckartsberg. "Existential-Phenomenological Research," in R. Valle (ed.) *Phenomenological Inquiry in Psychology*. (New York: Plenum, 1998): 21-61.

The profession of Interior Design, in its current adolescent state, is still developing fundamental aspects of its identity. We work, write, design and make with titillating anticipation of who we are becoming. It is reasonable that we bring this state of flux into the academic studio experience. Emerging design software (Revit, Rhino, 3dsMAX, C4D...), fabrication hardware (laser cutters, CNC mills, 3-D printers) and expanded approaches to how we can engage them offer a palpable vitality to a setting that is potentially uncertain and insecure.

This presentation will explore the theoretical plateau onto which design study in a particular intermediate-graduate level studio is based—that of learning as ‘critical play’—and will analyze what is potentially gained and lost when changes in the perception of the nature of learning as something other than a gravely serious endeavour is considered.³ The perspectives shared and the approach to design projects described form the basis of an interdisciplinary object-design studio. This course is part of an interior environments-focused environmental design program that allowed interior design and landscape architecture graduate students to work alongside environmental design undergraduates. By critically considering the learning experience from the alternating perspective of instructor and student, the ramifications of shifts in identity and responsibility for defining new knowledge will be demonstrated and examined.

Playing with identities

Theorist Mieke Bal reminds her readers that in order for theory to be both exciting and constructive, it is essential to invoke the constraint of allowing the object of theory ‘to speak back.’⁴ In our application of this concept, we wish to promote the idea that it is not simply the object of theory that has something to say—that in the act of theorizing learning as a form of play, all of the “players” in the game, including students, instructors, the process(es) invoked and the materials and tools explored, are invited to contribute to the conversation.

This shift to play theory as grounding for design thinking is justified by Jonathan Culler, who defines theory as ‘that which has come to designate works that succeed in challenging and reorienting thinking in fields other than those to which they apparently belong.’⁵ If this is so, the consideration of the qualities and meaning of play as a type of activity becomes an opportunity to reframe our approach to the “work” of learning and designing.

In his seminal work entitled *Homo Ludens*, first published in 1938, Jonathon Huizinga presents a compelling case for understanding forms of art as having derived (at least in part) from acts of play. Because Huizinga includes the plastic arts and architecture in his discussion, perhaps it is agreeable that we can extend this argument to interior design practices. Digital media artist and educator Mary Flanagan extends the link between play and creative acts by suggesting that games function as social technologies that organize persons into conscious and purposeful relationships.⁶ We propose that we, too, are looking for a system of purposeful organization and identity within the context of interior design education. The critical alternative proposed here is to solicit opportunities for play

³ The use of the term “Critical Play” is borrowed from Mary Flanagan, *Critical Play* (Cambridge: MIT Press, 2009).

⁴ Mieke Bal, *Travelling Concepts in the Humanities* (Toronto: University of Toronto Press, 2002), 5.

⁵ Jonathan Culler, *Literary Theory: A Very Short Introduction* (New York: Oxford University Press, 2011), 3.

⁶ Mary Flanagan, *Critical Play* (Cambridge: MIT Press, 2009), 9.
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within the studio construct in order to engage, motivate and inspire today's instructor and student in a manner that acknowledges and accommodates the challenges presented by the nearly constant barrage of opportunities to explore the potential of technologies that both endure.

If play can provide variability by incorporating a state of mind and responsive activity that keeps us flexible through evolutionary development (as Sutton-Smith suggests in the book *The Ambiguity of Play*) then perhaps play can act as a critical framework for using fabrication technology as a mechanism for the conceptual and theoretical exploration of design ideas.⁷

Mary Flanagan points out the historical roots of artists' preoccupation with how new work relates to that which was created by predecessors, noting that Marcel Duchamp challenged the idea of innovation by observing that without a "spirit of revolt," lulls in creativity are inevitable because too many artists simply pick up where their predecessors left off, using new techniques or approaches to address old questions without generating a radically altered vision of what is possible.⁸

Perhaps this critique can also be applied to design pedagogy today. The call to be innovative is still relevant, in part in response to increased competition among educational programs and the rising expectations of practitioners regarding the intellectual and practical skills of new graduates. It is our proposition that in order to anticipate and encourage innovation in the work of design students today, a radical shift in roles and expectations within the context of the studio is worthy of exploration. Specifically, this shift is an invocation of the notion of shifting identity and shared responsibility for learning and instruction.

An argument for becoming enchanted

If the studio setting can operate under the conditions of a game that center on a less extensive and more intensive exploration, the studio agenda becomes less about the completion of isolated and assigned tasks (teleological goals) and more about the development of creative and unique design expressions that avoid the trap once described by Duchamp. This intensive exploration depends on comparisons between art and play in what anthropologist Brian Sutton-Smith defines as play: both involve freedom, autonomy, invention, and personification.⁹

Huizinga adds to this the condition that 'play relies on physical action'.¹⁰ Action is essential and reflexive action is critical to becoming something new. Human geographer Jane Bennett notes a desire for 'the space to become otherwise...' and a longing to 'play around...', recognizing that 'metamorphosis carries within it the lure of the new... and the magic of transformation.'¹¹ Transformative moments are a significant part of play and design development. Bennett offers a parallel notion of play in her compelling argument for the cultivation of states of enchantment as a means of reinvigorating modern life. Bennett's description of the qualities of an enchanting phenomenon include an event called a swerve—a Lucretian term emanating from evolutionary biology and atom behaviour but with conditions parallel to the socio-political. In the swerve, things repeat with a twist and a resulting metamorphosis occurs. New identities, new images, new

⁷ Brian Sutton-Smith, *The Ambiguity of Play* (Cambridge: Harvard University Press, 1997), 229.

⁸ Mary Flanagan, *Critical Play* (Cambridge: MIT Press, 2009), 5.

⁹ Brian Sutton-Smith, *The Ambiguity of Play* (Cambridge: Harvard University Press, 1997), 133, 135.

¹⁰ Jonathon Huizinga, *Homo Ludens* (Boston: Beacon Press, 1950), 166.

¹¹ Jane Bennett, *The Enchantment of Modern Life*, (Princeton, N.J.: Princeton University Press, 2001), 28. In the *Swerve*: Transforming identities in the design studio

molecules emerge. This is the idea Duchamp describes as a solution to the lull in creativity to which he refers.¹² If states of enchantment can result in a kind of indeterminate, unexpected and magical metamorphosis, should we not strive to apply similar conditions as a goal for design problem development in order to transform the problem into an unanticipated solution?

Identifying the game...

For the purposes of this paper we are defining the design studio as a setting for design learning that exhibits the following qualities: it is placed within a larger system (a curriculum); it approximates but does not duplicate conditions in professional practice; it involves a variety of participants (student, instructor, and supportive staff) with an array of experiences and interests; it operates using a pre-determined set of agendas; and its success is determined largely by its tangible results (designs, learned lessons, grades). It is remarkable how these qualities are similar to Salen and Zimmerman's definition of the properties of a game. These include that 1) a game is a system; 2) it is artificial; 3) it has players; 4) it has conflict; 5) it has rules; and 6) it contains a quantifiable outcome/goal, and winners and losers.¹³

We engage in critical play by establishing such criteria and an environment for a game that provides opportunities to challenge conventional constructs, rules and outcomes. Credibility in the learning process occurs when we address plausible decision making within the artifice of the game construct. Credit for this idea belongs, in part, to game designer Greg Costikyan, who asserts that the inherent decision-making aspect of game playing must embrace an element of reality in order for the game to be perceived as plausible. He also claims that for games to truly engage their players, they must utilize a non-linear game structure that opens up more possibilities for a range of potential decisions.¹⁴ These possibilities are often discovered in-between the actual properties of the game in what we call mediating conditions.

Mediating conditions

In theorizing how to maximize creative potential in the studio, we will focus on four essential conditions that define and mediate within the game: assignments, past experience, tools, and language.

Assignments become mediators of agendas in that they can provide a space for reconciling inherent differences. These may occur between instructor and student and their independent expectations and goals for the game ahead. Assignments also provide a place for reconciling misunderstandings and interpretations as new experiences bring about new reflections on the processes that result. More specifically, the role of digital media and its associated materials offer a new partnership or collaboration, and a new potential for negotiations and conversations between instructors and students. The very nature of the studio experience usually includes the close proximity of individuals in the game so that in attempting to reconcile differences, we bounce (ideas) off one another just as molecules share and mutate in the evolutionary process. The assignment provides one type of space in which to play.

¹² Ibid., 39.

¹³ Mary Flanagan, *Critical Play* (Cambridge: MIT Press, 2009), 7.

¹⁴ Ibid., 7.

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Past experiences become mediators for potential. Experience acts as a mediator between the value of past practices and the as-yet-undetermined potential of new explorations. This has traditionally been conceptualized through the hierarchical relationship between instructor and student. Professors profess. Students absorb, test, and learn. Even in today's world of student-centered learning, assumptions are still rooted in the view that the genesis of knowledge is the teacher's expertise.

New conditions in the study of technology and materials offer opportunities to set new conditions in design pedagogy, however. The responsive and adaptive conditions intrinsic to the nature of developing technology are similar to the effective goals of design processes and pedagogy. If we agree that problem solving skills derived from experiences and the ability to find connected resources for potential solutions, then perhaps experience in all its forms and sources provides valuable precedents.

We look to the computer as a mediator between that content and skill. Tools (here we are using digital technologies such as the laser cutter to describe its particular role in establishing, challenging and reorienting critical identities in the game) become mediators between ideas and skill and designer and material. Given that new technologies can effectively provide efficiencies that were previously unavailable to the un-practiced (as becoming skilled in crafting requires extensive time and practice), having increased access to tools and the ability to integrate them into the studio experience is critical to extending our abilities and assumptions about what process can offer to push the boundaries of our conceptual and formal theories once considered fundamental. Computer-aided software and hardware provides the space in which to invent and test identities and roles. These identities extend beyond our selves to material, construction and the other players in the game. Even in its virtual nature, this space is becoming increasingly real. And with this new sense of place, which is an extension of our imaginations, we invent and reinvent ourselves and our world.

The demand for the use of new technologies in design education and practice is escalating. As such, design educators are challenged to integrate digitally-driven tools for representing and fabricating proposed designs into the learning process. Because technology changes quickly and sometimes unpredictably, design educators can no longer rely solely on their former experiences and previous knowledge to inform the way that lessons are conceptualized.

In a game where adapting roles become less dependent on empirical learning agendas but instead are focussed on the potential of discovery through collaboration between teacher and student, student to student and student to tool, we find that these technological experiments increasingly becoming the framework for unexpected, constructive and prolific findings. Language, and design language in particular, also becomes a mediator of boundaries. Although perhaps not invoked in the same ways and for the same reasons, the use of visual and verbal languages helps to define or reinforce the parameters of the playing field.

The following alternation of voices between instructor and student illustrates the value of the 'volley' as a means of generating a momentum for play and shifts in identity and authority as part of the 'game.'

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Instructor's voice:

In considering characterization in our specific design language and idioms, we allow for the interpretive distinctions students make even as we establish-critical foundational boundaries that determine the defined playing field in which to investigate design problems. The ideas we are exploring in studio are effectively constructed using three distinct voices outside of our own. These essentially become conversational players in the game: formalism, functionalism (including meaning), and materialism (including tools).

Below is an illustrated schematic image of a technique I use in studio to assist students with initiating concepts, establishing a trifecta of tangential yet connected critical players in the game. Each is asked to apply required and desired elements of the proposed design into the following framework. The diagram illustrates how students categorize and then explore the connections between the qualities desired in the process. The more connections found across the diagram, (for example, how compositional qualities and character of volume can be considered in relation to function as storage and material as recycled containers... and then add to that the design action of repetition, more specific storage, and tin canisters and so on...) the clearer the visualization of concrete design options in form and space becomes.

Student's voice:

I begin with an understanding of what role formal concepts of design could play in a studio environment. The desire to create new forms from dark matter (that also could be described as perceived nothingness) is always the challenge. If I rely solely on internalized past ideals about what shape things to come could be, I know that I would not grow as a designer or an individual. I recognize the immediate limitations of this approach to design work, although early on, I had little understanding of how to remove myself from it or how to dive deeper into the swerve while still being able to come up for air. It was not until I was given unconditional freedom to explore repetition and the potential patterning of diverging and converging ideas that I was truly able to become aware of what it was I had constructed. The unconditional condition of 'critical play' gave way to the exploration of material and process, which ultimately converged with what was originally perceived as diverging ideas. This led me to the intimate spark between form, function/meaning and material/process. The swerve catapulted me directly into the heart of what was for me unprecedented conceptual thinking and ejected me out of formal design thinking. It ultimately allowed form to transcend a superficial design role and to speak to the root of identity shared by every individual.

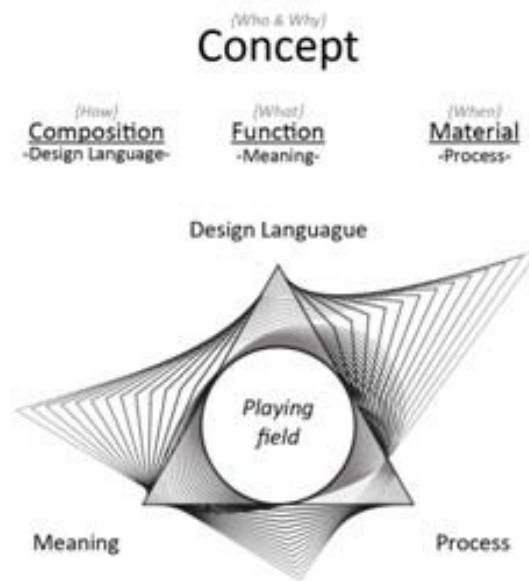


Figure 1. This diagram illustrates a critical tool for guiding students to conceptual design development. (Author's image)

Instructor's voice:

You credit the value of repetitive studies and the examination of patterns in your work as part of the transformation from mystery to understanding. Jane Bennett also acknowledges this process and reminds us that the 'point about spiral repetition is that sometimes-that-which-repeats itself also transforms itself.'¹⁵

Studio projects such as 'Laser and *Luminaire*' are designed to expose students to the laser cutter. Students are asked to develop a functional composition using the laser cutter as a dominant tool and light as the dominant design element. By challenging students to consider qualities of a laser cutter and investigating how it works and with a variety of materials, they are exposed to unexpected results and relationships that extend applications beyond initial expectations. The students inevitably practice technical drawing skills using AutoCAD (and like programs) and readily begin to see the transitional requirements to initiate 3-dimensional form and spatial decisions. This process has produced exciting and unexpected results in terms of the forms and processes initiated by the development of a design statement that is based on the tripartite factors articulated in the diagram above; the conceptual requirement to rethink the potential contribution of the laser cutter to the experience of fabrication; the application of supportive software that will enable the exploration of the tool's potential. The laser cutter (and like technology) provides the perfect field in which to enact repetitive studies. The student design shown in Figure 2 uses the laser to cut material to quickly test form and provide variations in an armature structure. This structure supports the more dominant voice of the strands of beeswax material, the conceptual and sensual qualities inherent in it and the form's overall relationship to light. The warmth of the incandescent light affectively distributes simultaneously varied visual textures and the scent sensations emitted by the wax as it gradually heats.

¹⁵ Jane Bennett, *The Enchantment of Everyday Life* (Princeton, N.J.: Princeton University Press, 2001), 40. In the *Swerve*: Transforming identities in the design studio



Figure 2. Illustration of wax luminaire in the various states made possible by the laser-cut canopy and rings developed to provide it with alternate forms. (Author's image)

Student's voice:

The choice to enact playful repetition in the design and fabrication of the wax light was brought on by the very nature of the material itself. As I explored the inherent ability of wax to transform under slight alterations of heat, I became aware that the material was attempting to remain in a form of stasis; a way of moving away from the heat source to remain still.

The shift of material form under heat made me question its relationship to the laser cutter and how it would react under this type of new heat source. After much exploration, I ultimately recognized that the overwhelming sensory experience produced by the beeswax under conditions of heat and light made for a much richer project that united composition and meaning through material process. The repeated investigation into a single material continually mutated into new ideas and new areas of exploration. The focus on the reactive tendencies of beeswax in the presence of heat continually brought me back to a material that seemed, by its very nature, to be indeterminate of form. The spiralling, repetitious undertaking of material studies and processes enacted a transformation of formal design concepts into an unanticipated outcome in this project.

Instructor voice:

The value of such experiences with students has re-established and confirmed the significance of critical play and how it inherently establishes a framework for research that embraces risk—something I find more readily in art making but struggle to support in design. The fact that the plastic arts, including architectural design, are bound to form, materiality, or functional requirements calls into question how performance (process) play can be called back to support the inspired, indeterminate design.¹⁶ Within the studio playing field, technological mechanisms such as

¹⁶ Jonathon Huizinga, *Homo Ludens* (Boston: Beacon Press, 1950), 166.

the laser cutter provide some of the neutral ground in which preconceptions regarding material application, compositional options and identity can be explored. Malcolm McCullough makes this point in *Abstracting Craft: The Practiced Digital Hand* by describing how many of our traditional processes so bound by the physical laws of material provide limited and often irreversible consequences. In other words, you cannot play around indefinitely with a physical medium.¹⁷ Simulated environments and virtual renditions of form and identities intrinsically characteristic of digital mediators provide an alternative and practical place for cultivating innovation in our profession.

Conclusion

This absorption into the pedagogical notion of identity and how computer-aided technologies have disarmed our perception of self gives way to a window that allows transparency between the identity of student and professor. The disarming of oneself can be attributed to the encounters found in the diverging and converging concepts developed in studio relationships between instructor and student. A shedding of expectations and the courage to then participate, no longer as the principle character in a linear story but instead as one voice among many, gives definition to this freeing of one's self-perception. Experience provides opportunity and responsibility to act as a guide through pathways that are often yet to be defined. We explore the potential in available technologies because they embody change. Our goal in this collaboration is to continue to examine ways in which tools provide alternative pedagogical guidelines for student and instructor alike.

¹⁷ Malcolm McCullough, *Abstracting Craft: The practiced digital hand*. (Cambridge: The MIT Press, 1996): 221. In the *Swerve*: Transforming identities in the design studio