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Tricia M. Kress
University of Massachusetts Boston

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ARTICLE

Tilting the Machine: a critique of one teacher's attempts at using art forms to create postformal, democratic learning environments

Tricia M. Kress, Ph.D.

University of Massachusetts Boston

Introduction

Ten years ago, shortly after being admitted to a graduate English program at a public college in New York City, I was also offered my first academic teaching position. The head of the English department hired me as an adjunct to teach 100-level writing courses. Looking back, I equate that moment in my life with being shot up into the metaphorical pinball machine that is public education. Let me explain.

Ever since I began my teaching career, I have repeatedly been seeking new ways to engage my students in their own learning. To do this, I have often turned to various art forms, including music, literature, paintings, film, television, and other assorted electronic media. Largely, however, I have gone about this by blindly choosing works of art that I perceived as having connections to the course material at the time. The curricular strategy guide I consulted in my first four years of teaching was simply a pastiche of techniques that were used by some of the more innovative teachers I had encountered during my own years as a student combined with some of my own new ideas thrown into the mix. You see, while I have been teaching for ten years, I have formally only been a scholar of education for six. When I first began teaching, I had no formal teacher training, nor had I ever read about what a teacher is or does or should be or do. I had only peripheral experience as a student informed by my imaginings of what could be.

Now, as a scholar of education, an assistant professor of Leadership in Education, and a postformalist, I recognize that while I always have very good intentions, my career has been comprised of many half-baked attempts at creating a more imaginative, engaging, and democratic education for my students. Sometimes I have been “successful” and sometimes I have not. What I have been inconsistent with throughout is maintaining a critical awareness of self, other and society that is necessary to truly create a more democratic learning environment (Greene, 1988). So while I believe that using art is a wonderful way of engaging students' social imaginations, and I did create successful learning environments for some, this was not always the case for others. Because of the very multiplicity of perspectives that I was trying to cultivate in students by using works of art, in my teaching, every lesson I designed was received differently by different students—a lesson that was empowering for one might have been oppressive for another. My trying to break the mold, to be innovative, might at times have been the very thing that prevented certain students from achieving to their fullest potential in my classroom. In short, my attempts at being radical often missed the mark because I inadvertently created disadvantages for some students. And for me, this is the big paradox of education (and public education in particular): How can we as educators push the boundaries of our classrooms and our students' thinking while always being cognizant of the multiple cultures and perspectives of our students and ourselves; and at the same time, while recognizing the very real ideologies and social structures that we are all reared in and that at varying times can both constrain and enhance our human potential?

This article has three purposes: 1) to illustrate and discuss the implications that incorporating various art forms and postformal theory into pedagogical practice may have for democratic education and social justice; 2) to trouble this idea by illustrating how good postformal intentions can have both oppressive and liberating outcomes; and 3) to bring to the surface how very essential it is, particularly for postformal educators like myself, to be reflective of their practices and continuously challenge their conceptions of self, other and society. To accomplish this, I develop a running metaphor as a means of illuminating the perpetual nature of learning to be a postformal, democratic educator, and I offer examples and critiques of some of my own practices during my ten years of teaching undergraduate and graduate students in public higher education institutions.

Entering the Machine

As defined by Kincheloe (forthcoming), “Postformalism operates to develop new ways of cultivating the intellect and defining intelligence, while concurrently working for social justice and a democratic redistribution of power.” It is a

multilogical system of meaning [that] draws upon critical theory, critical hermeneutics, post/anti-colonial modes of historical understanding, feminist notions of passionate knowing, subjugated knowledges, liberation theological ethics, and progressive pragmatist concerns with justice, liberty, and equality. (p. 2)

The concept of postformalism is akin to the theoretical *bricolage*^[1] presented by Maxine Greene (1988) as she encourages teachers to educate for freedom and social justice by cultivating social imagination through the arts.

In postformalism, metaphor is regarded as a powerful means of coming to new awareness about life, a process that is essential if one is to be a postformal, democratic educator. As Kincheloe (Thomas & Kincheloe, 2006) explains,

In a metaphoric cognitive state, individuals see not only the event in question but also the sonic boom produced by the intersection of this phenomenon with another dimension of the cosmos. The metaphor is intimate enough with the original entity to illuminate it, sufficiently far away from it to inflate its power to move us to a new conceptual understanding of an intangible relationship in the physical, social, or psychic world. Here we move to a new cognitive domain, a new understanding of self and world and the relationship between them. (p. 20-21)

For this reason, in this article, I embrace metaphor as a means of coming to a new awareness of my own limitations while striving to become a postformal, democratic educator in order to begin to open up possibilities for envisioning what a postformal, democratic education might look like in the future. I do this, not to be self-indulgent, but to harness the power of the individual and collective nature of life in general. Through illustrating and analyzing my own experiences, other educators can make connections and come to heightened awarenesses of their own experiences as well. As Roth (2004) explains,

[S]ocietal life and individual life are dialectically related. For society to survive it has to be concretely realized by individuals; but individuals need to embody society in their actions to survive. In their actions, individuals therefore always concretely realize action possibilities that exist at the collective level. (p. 5)

With this in mind, my experiences are not solely my own; they are, by extension, the experiences of the larger collective of educators, but also members of the larger society.

Metaphorically speaking, for me, attempting to be a postformal, democratic educator in a public institution feels much like playing a perpetual game of pinball. For those who have played pinball, I am sure you can already see some connections; for those of you who are less familiar, I will clarify. Simplistically, pinball is an old-fashioned arcade game (think mechanical, not digital) in which the player feeds a quarter or two into a machine, which is a freestanding, rectangular, glass enclosed, forward-leaning table with lights, pins, traps and other obstacles affixed to it.^[2] Usually, the player has three or so turns to use a steel plunger to shoot a steel ball onto the table and direct it through the obstacles by using flippers (rubber paddles) that are activated by pressing buttons on the sides of the machine. When the player fails to properly direct the ball with the flippers, the ball will fall down into the gutter and no longer be in play. The player then moves onto the next ball until all turns are exhausted and the game is over.

The point of the game is simple—get a higher score than other players by keeping the ball rolling around the table as long as you can, lighting up lights, smashing into pins and bumpers, and racking up points in the process. It's an exhilarating game, and I loved to play it as a child, but pinball can also be physically and mentally exhausting. It simultaneously requires a heightened awareness of all the elements on the table, the physical motion of the ball in relation to the gravitational force ever pulling the ball toward the gutter, and the physical reaction of the body to deploy the flippers at the appropriate moments with the appropriate force. Further, all this concentration occurs amidst a barrage of flashing lights, incessant buzzers, and ringing bells. Because of the physical and mental intensity required to play the game well for an extensive period of time, at some point the player will lose concentration, or the hands will get tired, and the ball will fall into the gutter. This is inevitable.

The nature of the game requires the player to then either choose to shoot another ball into the machine and try again, or to just walk away and leave the machine for someone else to try to tackle. Skilled pinball players employ various techniques to assist them in fighting back against the gravitational pull of the pitched table and propelling their ball to greater heights in order to score more points. For example, players may nudge or bump the machine in order to keep the ball in play and/or get more force behind their hits with the flippers. However, if they nudge too hard, sensors in the game are activated that prevent the player from continuing to play because he or she has attempted to cheat by tilting the machine. This is called a *tilt*. When the machine senses that it has been physically tilted, it will shut down the player's turn, often penalizing him or her in the process by taking away points or turns or ending the game completely. Exceptionally talented players will be able to subtly tilt the machine without activating the sensors that will indicate that the game has been tilted. People who are able to tilt the machine without *tilting* the machine are true pinball *wizards*^[3] because they play so well that they can push the boundaries of the game just enough to raise their scores without the game locking them out.

If we extend this concept to education, tilting the machine (pushing boundaries) without *tilting* the machine (preventing

learning) is one of several desired outcomes of postformal, democratic education, but it is exceedingly difficult to do consistently. Culturally responsive pedagogy, critical pedagogy, and democratic classrooms, (concepts that were entirely foreign to me up until the latter half of my still fledgling career) are intended to do just that, to tilt the educational machine (level the playing field) by breaking boundaries and revealing and correcting social inequality and injustice (Kincheloe, 1993). However, anyone who has engaged with these ideas will know that these terms do not imply prescribed pedagogical techniques, but rather dispositions or orientations toward teaching that are developed, practiced and embodied over time (ibid). In a sense, this means like a pinball wizard having a feel for the game while always knowing that on any given day, you run the risk of *tilting* the machine. Truly embracing these ideas as part of one's teaching philosophy requires an acceptance of the perpetual state of uncertainty that comes along with becoming a culturally responsive teacher, a critical pedagogue, or a democratic educator. These roles do not imply a finished product; instead, they demand that teachers consciously and continuously strive to become culturally responsive, critical, or democratic. In short, aspiring to be any of these means also resigning to never really becoming, but always attempting to become. Thus, we are always in a perpetual state of being and becoming; we are always works in progress (Kincheloe, 2005). And we will always continue to play the game, (hopefully) getting better with each attempt, and ultimately tilting the metaphorical machine *without tilting* the machine, which would render us impotent teachers.

It is important to note that the educational machine can be *tilted* in many ways, and sometimes when we least expect it. Of course, inexperience is likely the greatest factor in triggering a *tilt*, but even the best-laid pedagogical plans of a veteran have the potential to result in a "tilt" that renders the teacher impotent in the classroom, particularly on the occasion that the educator in question fails to be cognizant of the multiple constructions of self and other. In the remainder of this article, I will illuminate this by illustrating three different occasions during which I attempted to tilt the machine to create a postformal, democratic learning environment, but wound up with a *tilt* instead.

Ball 1: *Tilting the Machine While Using Music to Learn About Poetry*

Many educators have discussed the value of using music to engage students in learning multiple disciplines, from economics (Tinari & Khandke, 2000) to social studies and history (Lane, 1997; Hoffman, 1985) to science (Tobin, Elmesky, & Seiler, 2005) to English literature and literacy (Duncan-Andrade & Morrell, 2000; English, 1970; Morrell & Duncan-Andrade, 2002; Morrell & Duncan-Andrade, 2006). Particularly applicable to my work, Duncan-Andrade & Morrell, for example, advocate the use of rap music in urban classrooms to prepare students to learn about canonical poetry; while English (1970) suggests using "rock poetry." Popular music forms such as rock and rap have the potential to promote postformal, democratic learning environments because, as Frith (2004), North & Hargreaves (1999), and Rose (1994) explain, they are media through which many young people construct and express their identities. By examining our perceptions and interpretations through the use of various types of music, we can examine social hegemony and ideology by questioning how we come to perceive and interpret music as we do. Using music to explore "[d]iffering epistemologies, ontologies (ways of being in the world), ideologies, aesthetic sensibilities, spiritualities, cognitive styles, ad infinitum [can] move us to think about our own constructions in unprecedented ways" (Kincheloe in Thomas & Kincheloe, 2006, p. 107). Such is the foundation of a postformal, democratic education.

At the beginning of my academic teaching career, I attempted to do just this by using music to bring my students to new awarenesses of the multiplicity of perceptions. In one particular course, English 121: College Writing, I brought in song lyrics from the Eagles, Everlast, Sponge, and Pink Floyd. I also asked students to bring in their own songs. I had students read the lyrics (without the music) for content and literary devices like symbolism, metaphor, simile, and alliteration. We talked about denotation and connotation, and then we would listen to the music and talk about how the rhythm and the music influenced our interpretation of the songs. I did this for a couple of reasons, to illustrate rhyme schemes, meter and tempo, as well as various literary devices, and to show how interpretations are not static. They can differ depending upon who you are, the experiences you've had, and in what form you receive the words. I wanted my students to begin to see that "[h]umans always perceive the world from a perspective, from a point within the web of reality" (Kincheloe in Thomas & Kincheloe, 2006, p. 12).

In the case of Pink Floyd's *Dark Side of the Moon* (1973), one of my selected bodies of music, we also listened to the album while simultaneously watching the first half of the 1939 movie *Wizard of Oz* (a fun experience I learned from attending a Pink Floyd laser light show when I was in college). My intent was to illustrate how pairing the film with the music and lyrics changed the meaning of the music yet again. This combination was also meant to change students' interpretations of the film by providing them with a new vantage point from which to interpret a familiar movie that they had previously understood as simply a child's fairytale. My goal was to show them that interpretation is relational, not fixed and stable. How you *read* an artistic text depends in large part upon who you are and where you stand (physically and socio-politically) (Greene, 1988; Kincheloe, Steinberg & Tippins, 1999; Thomas & Kincheloe, 2006). By manipulating the art forms (i.e., reading lyrics

without listening to the accompanying music, then adding music, and then adding another art form, in this case, film) I hoped to make students conscious of their own changing constructions. How does adding a new experience, a new frame of reference, change the experience of listening to or reading the artistic form?

As I lay it out here, this all sounds like a pretty good idea. There is theory and research to justify using this technique, since others seem to engage in precisely these types of activities with successful results. The difference, however, between the cited researchers and my former self is, I took on this activity without really understanding why I was doing this. It was largely spawned from my own instincts that I now attribute to my emerging postformal tendencies. As I look back upon it now, I can't be sure how effective this was for most of my students. Sure, they all thought I was the young, cool, professor for trying something new, but developing a good image was not really my primary goal (even though, to be honest, I wasn't 100% sure what my primary goal was). For some students, my lesson was clearly eye opening, and they understood how the perceiver is connected to the way in which an art form is perceived.

The lesson culminated in an assignment in which students were to craft an essay about their own experiences with and interpretations of one of the musical albums. This exercise was meant to be empowering, giving students room to express their own ideas about what they had read and heard; however, I remember many of my students just wanting me to tell them what the meaning of the music was. I was trying to push the boundaries of the class, to get students to think for themselves, and they were asking me to think for them. "Just tell us what we need to know" was the phrase of the day, every day, toward the end of the semester as the due dates for their papers loomed ever closer. In the end, I attempted to compromise by giving the students examples of my own interpretations of the works. Again, for some, the examples were just that—examples. And they then gave their own interpretations based on their own experiences and the literary devices they perceived in the texts. But most others simply regurgitated the examples I had given them, thinking this was what I wanted. While reading those papers, I felt like I was hearing a recording of my own voice being played back to me. For me, the written assignment was an opportunity for them to show how much they learned about perception and literary devices by experiencing the works of art, but for them it was an opportunity to show me how much of what I taught them they were able to remember.

There were several problems with this particular unit. However, the most glaring to me at this moment is that my 23-year-old-ambitious-self had assumed that my students and I all had the same understandings about the purpose of education and the same goals in the class. Clearly, this in part caused my inability to convey to my students exactly what I wanted them to produce in order to complete the assignment for my class. This also caused the students to misunderstand what my expectations of them were. Most of these students, fresh out of high school, found it exceedingly difficult to formulate an argument and write a paper that supported that argument, although they were all very good at summarizing and regurgitating facts. So when I gave them free reign to develop their own interpretations of the works, my students were frustrated and angered by my lack of clarity and direction. In turn, I was frustrated and disappointed by their lack of creativity, and their seeming lack of desire to be free thinkers. It pained me to see this unit I had lovingly constructed as a means of opening up students' understandings of themselves in relation to the texts and the world being co-opted as another positivist lesson on rote memorization. And yet, I cannot fault the students for this. Most of them had just recently graduated from New York City public high schools where rote memorization and regurgitation of facts is commonplace. I know this because I too graduated from New York City public schools. While I have since had the pleasure of working with many New York City public school teachers who do not teach in this manner, five paragraph essays about the symbolism of the witches or lady Macbeth's dream in Shakespeare's *Macbeth* (1605-6) were (and probably still are) pretty common, and these essays were usually meant to assess what students had absorbed in the class lecture. They were not meant as tools to have students explore what these texts mean to them in life.

For students who are accustomed to regurgitating lectures presented by the teacher, closely reading, analyzing, and dialoguing with texts are usually not necessary or encouraged activities because the only person whose opinion matters is the teacher. Freire (2000) refers to this as the banking model of education, whereby the teacher deposits bits of discrete information into students' brains, and student achievement is measured by how much of that information can be echoed back to the teacher. By not providing students with an educational dictatorship in which many were very comfortable and already capable of high achievement, many of my students were at a loss for how to succeed in my class. They either did not yet know how to think analytically, or they simply felt I was being cryptic, wanting them to guess how I interpreted the works. In effect, I was asking most students to do something they had never done before and had actually been discouraged from (or sometimes punished for) doing in the past. No wonder they fought me so much. To this day, it still pains me to think about their request, their *plea*, to just tell them what they needed to say in order to pass.

In contrast to my students, I had recently received my Masters degree in English with a concentration in Rhetoric and Writing. This kind of freethinking and the ability to formulate a strong argument were expected in everything I did. The purpose of education, to me, was very different than it was for my college freshmen, most of whom just wanted to know what they had to do to pass the course and move on. Thinking for themselves within this conception of education was a hindrance

to their desired goal of getting their degrees, an exchangeable form of symbolic capital on the job market, just as their high school diplomas had been exchangeable for seats in the local college. Labaree (1999) attributes this phenomenon to education being seen as a vehicle for social mobility rather than the development of an informed citizenry. Looked at in this way, my class was just another hurdle to get over in order for students to get their diplomas and join the workforce. For me, however, my course, in which I had invested energy, time, and heart-felt emotion, was more than just a hurdle. I wanted it to be an experience where my students and I learned more about ourselves, each other and society by examining the texts in unique and unexpected ways, all through the experience of reading and writing. My emotional and political investment in my pedagogy is not what many students felt they wanted or needed from me at that time. By considering my own desires and goals without considering the needs and goals of my students, I had inadvertently short-changed the students who did not share my goals. Those students who had been taught to think critically, like I had, excelled in my class, while others hovered at a level of mediocrity. By creating a learning environment with only my own narrow scope of the world in mind, I had failed many of my students and succeeded in *tilting* the machine.

While I could go on at length about this example because there were many more things wrong with it than what my brief analysis shows, I do attribute much of the poor design of that unit to my own inexperience and ill-preparedness to teach in a postformal, democratic manner. Thus, to illustrate how *tilting* the machine can also happen to experienced teachers, I will provide you with a more recent example from just this past spring.

Ball 2: Using Visual Art and *Tilting the Machine* in a Doctoral Level Education Class

Like music, visual art forms are also well documented as having the potential to help create postformal, democratic learning environments. While particularly popular in social studies, history (Christensen, 2006), and English (Albers, 2007; Medicus & Wood, 2000), visual art can also be used in science (Mathewson, 1999) and math; in fact, the publishers Taylor and Francis circulate an entire journal devoted just to mathematics and the arts^[4]. Incorporating visual art into teaching is such a valuable and versatile technique that Wikstrom (2001) even documents the use of visual art in the teaching of nursing care. As explained by Kincheloe (Thomas & Kincheloe, 2006),

art and other aesthetic productions provide an alternative epistemology, a way of knowing that moves beyond declarative forms of knowledge. Here we see clearly the power of multilogicality and the bricolage: educators and students of cognition gain new insights into the traditional concerns of their academic domain by looking outside their discipline. (p. 154)

It was with this in mind that I decided to begin the first day of a doctoral level course entitled Culture of Urban Schools with a piece of art (see Image 1 below) rather than with a discussion of the structure and requirements of the course.



(Image 1. Lawrence High School student mural)

The accompanying lesson, designed to lay the foundation for the course, went something like this:

Step 1: Before speaking to my students, other than saying hello, I projected Image 1 on a PowerPoint slide. Below the image were two questions: Is this art? How do you know? We then had a class discussion of why students thought it was or wasn't art.

Step 2: I introduced two more questions: Who decides what is art? Who decides what is culture? We then had a class discussion about who can and can't decide what is considered art or culture in American society.

Step 3: I distributed a newspaper article from *The Boston Globe* (from which I had retrieved the original artwork) that documented the removal of a student's mural from the hallway of a public high school because it was deemed too controversial^[5]. I then presented a rhetorical question to serve as a focal point for the semester: What is the culture of urban schools?

Upon reflection, I believe the above activity was fairly successful at accomplishing at least part of what I had hoped to accomplish, which was to make my students cognizant of value judgments, developed within particular cultures, upon which individuals create and perceive art and other forms of cultural expression. As explained by Greene (1988),

It is clear that choice and action both occur within and by means of ongoing transactions with objective conditions and with other human beings. They occur as well within the matrix of a culture, its prejudgments, and its symbol systems. Whatever is chosen and acted upon must be grounded, at least to a degree, in an awareness of a world lived in common with others, a world that to some extent can be transformed. (p. 4)

In the case of this work of art, the student had created a mural depicting two iconic figures in black history (Martin Luther King Jr. and Malcolm X) using graffiti art, an aesthetic associated with urban hip-hop culture. This was an important representation of the student artist's identity and culture as well as the identities and culture of many other students in the school. The superintendent of the school district (who did not share the same culture as the artist), based upon his culturally situated value judgments, made the assessment that the mural was not appropriate for display in the school hallway—he called it “ghetto art,” implying that it was a lesser art form than other types of art. Additionally, he perceived Malcolm X as a volatile figure who promoted violence rather than as an iconic figure representational of the larger Civil Rights Movement. Because of the superintendent's empowered position over the student, the student was forced to paint over the mural and redesign it so that it was more aligned with the superintendent's dominant culture view of what was an acceptable art form.

Through this activity, I aimed to illustrate that culture is not just something we possess; it is simultaneously who we are and what we do. It is both embodied and performed, and it occurs amidst a struggle for power in society (Swartz, 1997). As cultural institutions, public schools (and thereby public education) can also be thought of in this way. From there, my students and I entered into a discussion about the structure and content of the course. When designing my syllabus, I had in mind an educational environment that would enable my students to define for themselves what the culture of urban schools is. In other words, my goal was not to explicitly tell them what I thought or what others thought, but rather to have them read various educational ethnographies and from those texts determine what *they* thought based on the readings and their individual and collective experiences. They would then apply this new theory to their own work. This end goal, to me, was worthwhile because all of these students will soon be writing dissertations in which they must think critically and analytically and come up with their own definitions of and theories about culture and education. I specifically arranged the course so that I would not be doing much of the talking. Naturally, I could speak all day about my thoughts on the texts, the pros and cons of each, the soundness of the research designs and the theories upon which the works were based, but I wanted the students to do this, to be critical consumers of ethnographic research and then ultimately develop their own understanding of such a contestable concept as the culture of urban schools. To promote student engagement and class dialogue, each student was required to select one text from the syllabus on which they would serve as expert. They would each develop a lesson or activity for the class that was meant to a) illustrate the main points, theories and research strategies within the works; b) highlight key quotations; and c) raise questions for discussion. As the class engaged in their lessons, I would take notes and then follow up in the second half of the class in order to point out key issues, quotes, or questions that may have been overlooked.

While I do feel that my course structure was largely successful for many students at most times, there were other times when this was not the case. For me, my most glaring mistake was assuming that my art activity would serve as a model of the types of activities I hoped my students would design. For some students, clearly it did, and they crafted exercises that were interactive and designed to incite class discussion. Others, however, simply gave lecture summaries to the class (all of whom had already read the texts) and then presented the class with a couple of questions to consider. In these instances, even though the students may have been engaged while actually reading the texts, they were less engaged in the class discussion. What emerged for much of the semester was, ironically, largely reminiscent of the workings of the urban schools that my students and I hope to change. As Thomas (Thomas & Kincheloe, 2006) says,

One dominant view of teaching and learning has gradually been institutionalized in American education over the past century although many have argued that it may not be an accurate model of teaching and learning and certainly may not be the best model for students in a democracy. (p. 37-8)

This banking model to which he is referring is what began to take form in my course.

The irony is, I largely turned over my class to my students to create a more postformal, democratic learning environment, but with their new freedom to steer the course, many of the students then turned it back into a more traditional academic lecture instead. All of my students are currently or were at some point teachers, and they don't all subscribe to a lecture-style classroom, yet this was the structure they opted for in my course. I don't know for sure why they chose to lead the class in the way they did, but I could surmise that this may be attributed to their understanding of what doctoral-level work should look like. After the course was over, I received very positive course evaluations from my students; however, there were at least two who said that they wished I had been the one speaking more because they valued what *I* had to say. While I wanted to create a postformal, democratic learning environment in which my students could see themselves as authorities and take ownership over the course materials, my students still viewed *me* as the expert. By structuring my class so that I was learning *with* them and not lecturing *to* them, I again succeeded in *tilting* the machine by failing to allow my students to learn *from* me. Once again, I assumed I knew what they wanted or needed, and I did not step outside my own conception of what a fruitful educational experience should be.

Ball 3: *Tilting the Machine... Intentionally*

My final example will also serve as the conclusion to this paper because it illustrates how as reflective and radical as we may try to be, social structures can still creep up behind us and influence the choices we make as educators. Because, let's face it, we are still academics, and we still work within a larger system that is regulated by its own rules and norms. As a pre-tenured faculty member, I feel the pressures of these rules and norms more acutely, perhaps, than a tenured faculty member might. I still struggle to break boundaries, but always with one eye on the amount of wiggle room I have within the expectations (spoken and unspoken) of my institution.

Recently, while preparing for his dissertation proposal hearing, one of my advisees emailed me two PowerPoint slideshows that he had created for his presentation. The first explicitly followed the structure his committee and I devised for this particular benchmark; that is, it consisted of four slides and a title slide, included his purpose, rationale, questions, theories and methods. It was very direct and without extraneous information. The second was much more creative consisting of ten slides, video clips, photographs, and creative graphics, all animated in ways meant to illuminate and/or punctuate various aspects of the student's work. Both were excellent presentations and artistic in their own ways, but they were very different, with the second *feeling* like an art form that evoked emotion and the first *feeling* like a research presentation that asserted academic authority.

So there I was amidst exactly the learning environment I have been trying to cultivate throughout my career. I had a student ready, willing, and able to not just break boundaries but to explode them, and I was faced with a choice of allowing him to explode those boundaries, or asking him to adhere to the more academic norms of what a research presentation looks like. For ten years I had been trying to push the boundaries of education, and before I had time to think about it, I found myself going against my instincts as a postformal, democratic educator by coaxing him to curb his creativity for this particular activity. I already knew my student was capable of breaking boundaries, but I wanted him to be able to illustrate that he could fly high within those boundaries as well. I *tilted* the machine *knowingly* and *intentionally* because, like it or not, there are expectations of what research should look and feel like within the academy, and I did not feel yet confident enough in my own feel for the game to challenge this.

And with that, I leave my readers with questions not answers. How can we continuously and *honestly* strive to be postformal, democratic educators when we too are steeped in the same positivist ideologies as our students? How do we balance meeting the needs of our students, fulfilling our own desires as educators, and walking the fine line of academic expectations? How do we cope with the reality that we can never really be as postformal and democratic as we would like to be because we still have to navigate very real structures that, if ignored, could have very real consequences? In a phrase, how can we improve our "feel" for the game and learn to confidently tilt the machine without "tilting" the machine?

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^[1] *Bricolage* is a French word which means to improvise or to build something from materials close at hand. It is similar to the notion of *collage*.

^[2] For a more detailed discussion of pinball, its origins, machine design, rules of play, etc. see <http://en.wikipedia.org/wiki/Pinball>

^[3] The term *pinball wizard* was coined by the British band, The Who, in their 1969 rock opera, *Tommy*.

^[4] This is referring to *The Journal of Mathematics and the Arts*, which is published electronically and on paper four times per year.

^[5] This incident occurred in December 2007 in Lawrence, MA. The student's mural, which depicted Martin Luther King and Malcolm X, had been approved by the school's principal, but the superintendent called it "ghetto art" and forced the student to paint over it and create a new mural without Malcolm X because he felt that the depiction of Malcolm X encouraged violence. The article can be found at the following URL:

http://www.boston.com/news/education/k_12/articles/2007/12/12/removal_of_student_mural_is_decried/