

Between Structure and Improvisation: A Conversation on Creativity as a Social and Collaborative Behavior with Dr. Keith Sawyer

Danah Henriksen¹ · Punya Mishra¹ · The Deep-Play Research Group^{1,2}

© Association for Educational Communications & Technology 2016

Keywords Creativity · Collaboration · Social learning · Socio-cultural theories · Dr. Keith Sawyer · Interview · Education · Learning · Technology

The way you look at the world determines how creative you can be.

– R. Keith Sawyer

In the long history of humankind (and animal kind, too) those who learned to collaborate and improvise most effectively have prevailed.

– popularly misattributed to Charles Darwin in hundreds of book, websites, and internet quotations

When the music changes, so does the dance.

– African proverb

Mary Lou Fulton Teachers College, Arizona State University

The Deep-Play Research group is a loose collective of faculty and graduate students at Arizona State University and Michigan State University. Participants include: Kristin Elwood, Danah Henriksen, Sarah Keenan, Rohit Mehta, Punya Mishra, & Carmen Richardson. Address all communication to Punya Mishra: <punya.mishra@asu.edu>.

✉ Punya Mishra
punya.mishra@asu.edu

Danah Henriksen
danah.henriksen@asu.edu

¹ Arizona State University, Tempe, AZ, USA

² Michigan State University, East Lansing, MI, USA

Introduction

The field of creativity research spans multiple disciplines. In education, a great deal of focus around creativity has been limited to individualistic views of creativity, particularly those stemming from psychological or psychometric perspectives. While individual, psychological or psychometric approaches may be one important way to frame creativity, we in the Deep Play Research Group emphasize that this is only *one* of the ways in which creativity might be examined. Education lies at the crossroads of multiple disciplines, and teaching and learning are complex arenas. We must explore multiple, varied and diverse views that support the disciplinary richness of creativity and education. In recent articles in this column series, we have explored different views and research perspectives on creativity, via interviews with noted scholars working in this area (Good et al. 2016; Richardson et al. 2016). In this article, through an interview with Dr. Keith Sawyer, we extend the conversation into a social and collaborative view of creativity.

Dr. R. Keith Sawyer is the Morgan Distinguished Professor in Educational Innovations at the University of North Carolina in Chapel Hill. Dr. Sawyer has written multiple books on the topic of creativity, and is considered one of the world's leading experts on the subject. Dr. Sawyer came to the field of education by way of a diverse background and interests. He completed a computer science degree from MIT in 1982, then began his career in videogame design for Atari. After this, he worked as a management consultant in innovation technologies with Kenan Systems Corporation. In 1990, Dr. Sawyer began his doctoral studies in psychology, focusing on the study of creativity with the renowned Dr. Mihaly Csikszentmihalyi (author of best selling books such as *Flow* and *Creativity*). From that time on, Dr. Sawyer has devoted his work and research to issues of creativity, collaboration, and learning.

In an interview with Dr. Sawyer, several themes emerged, under the umbrella of creativity as social and collaborative in nature. These themes include: group or ensemble creativity, creativity as structured improvisation, creativity as acting and engaging with the world, and the potential of networking and social technologies to enhance creativity.

Ensemble Creativity

Research has demonstrated that creative and productive individuals integrate aspects of their personal and professional lives, in ways that enrich both (Henriksen and Mishra 2015). Dr. Sawyer, as a creative individual and a scholar of creativity, has managed to do just that. Amid other interesting and diverse aspects of his background is the fact that he has been a jazz pianist for over 30 years, having spent several years playing piano with Chicago improv theater groups. This is where his interest in creativity, and his particular take on it, began. Dr. Sawyer became an accomplished classical pianist at a young age. But a crucial turning point came when in high school he joined the jazz band. As he describes it:

The first day of rehearsal, the band director put the sheet music in front of me, and I couldn't play a note. There were no notes on the score! I didn't know that in jazz, you're supposed to improvise your own parts. It took me a year, teaching myself all over again. I've always been fascinated by improvisation, and how it is that more than one person can improvise at the same time. It's unplanned, and it's unpredictable. You don't know what's going to happen. But somehow, magically, it just comes together and makes something beautiful.

This initial interest led to a research focus in social or collaborative creativity, particularly in considering groups, improvisation and ensemble structures. Dr. Sawyer discussed how it is difficult enough to improvise alone, but the challenge dramatically increases when improvising in an ensemble. It is here that listening power is elevated to maximum capacity, because one must listen with extraordinary care to what everyone else is doing, and translate that into one's own practice instantaneously. As Dr. Sawyer puts it, "You listen to what everybody else is doing because their parts are not written out either. You must listen at the same time that you are creating new things. It's a challenge, but it inspires you to play things you wouldn't have played if you had been by yourself."

Such careful listening is akin to Root-Bernstein and Root-Bernstein's (1999) and Mishra, Koehler, and Henriksen's (2011) discussion of *observation* as the first step to creativity. In using observation as a core skill for transdisciplinary creativity, it requires intake and use of sensory information from the surrounding world, through highly tuned and focused

perception. In this case, Dr. Sawyer's description suggests that listening is something that happens both organically and with intense focus. Just as observing requires that we go beyond merely looking, to *see* what is there, it also means going beyond merely hearing, to *listen* for the details. When this happens well, it allows the entire ensemble to coalesce around distinct sounds and rhythms that creates music. Thus it is both perceiving and then creating *patterns* collaboratively — another transdisciplinary skill noted as essential to creativity (Root-Bernstein 2003).

Dr. Sawyer parlayed his experience in jazz improvisation into his creativity research. His first study involved jazz musicians in Chicago, and from there he discovered a genre of theater called Improvisational Theater. He auditioned and earned a part as a pianist, aided by his jazz background and improvisational skills. Stemming from this focus on ensemble work, Dr. Sawyer grew fascinated with the entire sphere of improvisation. For example, this occurs when actors improvise their dialog on stage, without a script or without a director guiding them. He reflected on this, commenting:

It's an ensemble creativity. I noticed in my research very similar patterns in musical improvisation and in theater improvisation...in the nature of how different people somehow all improvise, and come together to generate something that works, something that works for an audience, something that is coherent. It builds a new creative product that no one person could have come up with by themselves, but the group is able to do it.

This led to a search to understand how such improvisation actually works. Dr. Sawyer suggests that if you engage with any area like this for some time, you quickly learn that it is not completely improvised. There is always an open and generative yet identifiable structure to improvise within. Dr. Sawyer describes this as creativity, in jazz musicians as well as as improvisational theater, occurring with "guiding instruction... to help them coordinate." The group, he discovered, "is improvising but they are improvising within a structure."

Even beyond the realm of teaching, he suggests that this balance is necessary for real teamwork across fields, be that in jazz, business or any other area of collective work and learning. In his definition of creativity, Dr. Sawyer sees a subtle difference in how his take on creativity has varied from that of many other researchers. He notes a certain amount of consensus around creativity as involving elements of novelty and effectiveness, aligning with many existing definitions (Amabile 1996; Cropley 2003; Fox and Fox 2000; Zhou and George 2001). However, in comparison, Dr. Sawyer's work differentiates between individual and group creativity:

What may be different about my definition is that I think about both individual creativity and group creativity. For

me, if it is group creativity, then the group is generating something new that they haven't generated before, and the measure of whether it's creative or not is also collective...by the group, the members of the ensemble, or the audience.

So Dr. Sawyer suggests that it is not just something new and original, but also something that has effectiveness for an audience. He notes that, a "creative" product must work well or have value to others saying, "You could be generating noise which is completely original, but it doesn't provide any fulfillment to an audience. It doesn't really benefit anybody. I'd say it has to be original, but it also has to work somehow for some audience."

This basic insight about how improvisation occurs within some type of structure, leads to implications for how to create effective groups in any setting; whether it be for a business setting or for academic research or a sports team. Dr. Sawyer notes that any creativity involves "the same dynamic, of this tension between structure and freedom."

Structured Improvisation

This balancing tension between structure and improvisation characterizes much of how Dr. Sawyer sees creative work happening in practice across disciplines. In particular, he has focused on how this dynamic plays out in teaching. In his book, *Structure and Improvisation in Creative Teaching* (Sawyer 2011a), Sawyer and colleagues build on the insight that effective teaching is essentially improvisational. He notes that:

There are improvisational exercises that you associate with theater. You are learning things like close listening. You are learning to build on what someone else does, as opposed to ignoring it or rejecting it and imposing your own view. I believe it can help teachers to be more effective to work through some of these improvisational activities.

In contrast to many traditional forms of learning, which involve mere rote activity and memorization, Dr. Sawyer argues (in keeping with current research in the learning sciences) that learning becomes much more meaningful if the learner is actively participating and able to choose their own path. Thus, Dr. Sawyer suggests that all genuine learning is creative and improvisational. As he says: "Most educational researchers wouldn't use that term, but they will talk about constructivism. Children construct knowledge, and that is essentially an improvisational process. I would call any effective learning environment creative."

At the same time, he acknowledges that teachers (and students) must have structures so that they are not constantly trying to reinvent the wheel or prevent the classroom from devolving into chaos. This is where the balance or tension between creativity and improvisation comes into play. In fact, it is these guiding structures that allow for emergence, variation and creativity in teaching. As Dr. Sawyer notes:

We know that it is ineffective teaching for the teacher or professor to stand in front of the classroom and lecture, or give the same lecture you have year after year... We know effective learning requires active participation on the part of learners. *When the learners are active then the teacher can't know exactly what's going to happen.* There is unpredictability there, and *good teaching involves collective improvisation with the students*, with the learners. (Emphasis added).

Such collective improvisation exists in the balance between activity or spontaneity, and the need for teachers and students to have structure. For classroom teachers, there are learning outcomes that students must meet in some way, such as assessments or benchmarks. As Dr. Sawyer comments:

Students can't just wander around and do anything they want, so that is where the guiding structures come in. The teacher's role is to try to lead students to desired learning outcome—to manage those guiding structures—while at the same time, helping the students be creative within the structure.

Along these lines, Dr. Sawyer does not view creativity as a subject that can be taught, per se, but something that teachers can design into a learning environment. Teaching creativity itself is problematic in his view because of the connotations it brings with it:

Whatever creativity is, I don't think you can teach it. You can design experiences, and by engaging in those experiences a learner might learn to become creative. But I don't like the phrase "teaching for creativity" because it seems to imply connotations of a personality trait. For example, it becomes almost like a parallel with intelligence. It wouldn't make sense to talk about teaching someone to be intelligent. That sounds wrong. For me, it's the same way with teaching creativity to someone. I don't think that's possible.

But in Sawyer's view it is possible to design learning environments for creativity. And in this, teaching becomes an act of designing. This view has parallels to a line of teacher education scholarship that emphasizes a teacher's role as that of a designer (Koehler and Mishra 2005; Norton and Hathaway

2015; Kirschner 2015). As Dr. Sawyer sees it, such creative teaching involves designing constructivist learning experiences, in which learners can engage with creative practices. This suggests the idea that creativity is not just in the head, but rather as a process of “engaging in a set of behaviors that are associated with creative outcomes.”

Creativity as Acting and Engaging with the World

For Dr. Sawyer, a part of his concern with the idea of teaching creativity is that it brings the connotation that creativity is a personality trait or a mental ability, which harkens back to more individual, psychological or psychometric approaches. His view of creativity as engaging in specific behaviors diverges from the notion that creativity is only inside the head. Instead as he suggests, it is “the way that you act and engage with the world.”

Dr. Sawyer is cautious about semantics that suggest creativity as habits of mind, if only because such semantics put creativity back in the domain of the mind alone. As he states:

I prefer to talk about practices. Habits of mind, I’m not opposed to...as I do think there are ways of thinking associated with greater creativity. But I prefer to think about ways of being or ways of engaging with the world. For me, habits of mind seem to get you too much inside of the head.

This is also what he sees as one of the biggest challenges in creativity studies. In fact, the major challenge for creativity research, stems from an inability to observe the internal creative process—the inner workings of the mind when people are being creative:

The problem with studying what goes on in the mind is that, obviously you can’t see it. You must use various indirect methodologies. With group creativity, you can see everything. If it’s improvisational theater performance you can watch it, you can video-record it, you can transcribe the video. It is creativity made visible.

His book *Explaining Creativity (2nd ed.)* (Sawyer 2011b), presents his view of creativity as a way of engaging in creative behaviors with the world around you. He describes this as a socio-cultural approach to creativity, contrasted with the individualistic approach that has been dominant through the history of the field. As we have noted elsewhere, (Henriksen et al. 2015) such individual, psychological or psychometric approaches are not helpful to classroom teachers, who must focus on the construction of creative environments and tasks that support learners in the collective space.

Dr. Sawyer discussed how, around the 1980’s and 1990’s, creativity began to also be conceived of as a social and group process or activity. He locates his own research within this socio-cultural area, returning to his definition of creativity:

Creativity has to be novel and also appropriate, however that appropriateness gets defined through a social process. Almost any creativity researcher would agree with that. Creativity unavoidably has that social component built right into the definition even if you are a psychologist. You cannot study creativity and not in some at least indirect way have the social embedded in your definition.

This emphasizes Dr. Sawyer’s view of learning as a socially constructed process, through a deeper level of understanding than one would see in rote, traditional or memorized procedures. He suggests that this “deeper understanding” is also associated with creativity, and prepares a person to be creative through adaptive expertise. This expertise involves the ability to go beyond what you have been taught, to use and transfer knowledge into new applications and think of new ideas—which is the core of creativity. As Dr. Sawyer frames it, “The core of creative learning is to come up with things built on what you have learned, but that you haven’t been taught.” A person can use the knowledge they have learned to extend beyond what they have been taught, by learning the underlying structure of the discipline. Dr. Sawyer suggests, “That underlying structure enables you to derive things that you haven’t been taught explicitly. That derivation is a creative process.”

This view of creativity as embedded in the social and collaborative aspects of learning, also has implications for the way we view and consider technology as a tool for collaboration and learning—both in culture more broadly and within education paradigms.

The Collaborative Web of Creativity and Technology

Dr. Sawyer sees technology as a key driver of creativity for groups, with enormous impact in recent years with the rise of social media. He notes that social media represents a collective social process, in which millions of people are collectively creating things, suggesting things, or starting movements. For example, open source software is built on the idea that people can creatively collaborate to develop something new and useful. The creativity of a number of people working together means that more great ideas can arise, and more people can help to see where flaws or bugs are. Technologies like Firefox or WordPress, or communication applications like Signal, are just a few examples of this. There are more open source offerings than ever before, as productivity software like

OpenOffice, or media software like Audacity, demonstrate how products can be constructed by collective creativity and offered up to the world.

Dr. Sawyer discussed how various forms of social media enable large scale group creativity that would not be possible otherwise due to geographic or other constraints. He suggests that group creativity has always been a human imperative, noting that even when proto-human societies were living in small groups of only a hundred or so people, they still came together to perform their own forms of theater or ritual performances. Along these lines, Dr. Sawyer commented:

I believe that the group and sociability is embedded in the human genome. We've been doing it forever and ever. . . . I don't think it [technology] changes our basic social and collaborative nature, but it has enabled that to be scaled up. It's not just face-to-face anymore. It's not just the five people in your jazz ensemble. It's the 50 million people on Snapchat, or Facebook, or Twitter. I call it a collaborative web.

Many people consider this a kind of social network, or an open source community. Dr. Sawyer described how open source software functions as a form of group creativity, but a group creativity that involves thousands of people, not just a small group in a conference room. It is still a behavior that builds or refines something—through a creative developmental process.

In discussing how new technologies change our conception of creativity, Dr. Sawyer emphasized that this depends on who you are and what conception you begin with. He suggests that in the United States there tends to be a conception of creativity that is very individualistic—a perception that may not be true in other countries. He also reflected that new technologies may be undermining this view of creativity as an individual phenomena. As Dr. Sawyer notes:

You cannot associate open source software with one person. It changes the way we as a society think about creativity. It gets us away from a myth of everything being associated with smart, creative individuals. It's this new world of realization that much of creativity is social and collective.

Conclusion

Bringing these ideas back into the realm of teaching and learning, Dr. Sawyer reflects on his view of creative teaching as being effective teaching—a view which connects with a body of educational research (Anderson 2002; Bleedron 2005; Cropley 2003; Esquivel 1995; Starko 2005; Sternberg 2006;

Tan and Law 2004). He notes that impactful learning only happens when the learner has creative freedom to experiment or play with ideas, as opposed to being provided with a set of facts to memorize and regurgitate on a test. Since there is no locked-in-stone script, effective teaching is improvisational. Dr. Sawyer summed this up:

The message I have for teachers is to expect the unexpected, expect the unpredictable. It is challenging because it's a different way of thinking. It's really a shift from thinking of what you're doing as teaching to thinking of what you're doing as designing experiences.

This reflects an important point of Dr. Sawyer's view of effective teaching as involving acts of design, in the way that teachers are designers of learning. Design has been noted as both a social process and a creative one (Schön 1984), which may be what connects it with Dr. Sawyer's views on creativity and effective teaching.

An important meta-takeaway comes in Dr. Sawyer's view of the challenges and future of the field of creativity research. In discussing where he sees creativity going in the future, both as a human activity and a research field, Dr. Sawyer notes that:

The biggest challenge is to figure out how to manage this interdisciplinary [nature of] our field. To come up with a more holistic, more unified view of creativity. It's the nature of scientific research that it tends to be compartmentalized within disciplinary silos. We have the neuroscience of creativity with brain imaging. We have people studying social networks and mass media and open source software, representing a radically social form of creativity. . . . We have the cognitive psychologists studying what goes on in the brain when people are creative. For the most part, these researchers don't talk to each other. The most exciting thing that could happen would be for all of these people to come together and create a broader interdisciplinary perspective on creativity.

This idea not only respects the interdisciplinary nature of creativity, but also powerfully reflects Dr. Sawyer's views of the social nature of creativity, as being an emergent, creative synthesis of many voices and ideas. One would expect no less from a creative, improvisational jazz musician.

References

- Amabile, T. M. (1996). *Creativity in context*. Boulder: Westview Press Harper Collins Publishers.
- Anderson, D. (2002). Creative teachers: risk, responsibility and love. *Journal of Education*, 183(1), 33–48.

- Bleedron, B. (2005). *Education is everybody's business*. Lanham: Rowman & Littlefield Education.
- Cropley, A. J. (2003). *Creativity in education & learning*. Bodmin: Routledge Falmer.
- Esquivel, G. (1995). Teacher behaviors that foster creativity. *Educational Psychology Review*, 7(2), 185–202.
- Fox, J., & Fox, R. (2000). *Exploring the nature of creativity*. Dobuque: Kendall/Hunt Publishers.
- Good, J., Mishra, P., & the Deep-Play Research Group. (2016). Creativity as resistance. *Tech Trends*, 4(60), 309–312.
- Henriksen, D., & Mishra, P. (2015). We teach who we are. *Teachers College Record*, 117(7), 1–46.
- Henriksen, D., Mishra, P., & Mehta, R. (2015). Novel, effective, whole: toward a NEW Framework for evaluations of creative products. *Journal of Technology and Teacher Education*, 23(3), 455–478.
- Kirschner, P. A. (2015). Do we need teachers as designers of technology enhanced learning? *Instructional Science*, 43(2), 309–322.
- Koehler, M. J., & Mishra, P. (2005). Teachers learning technology by design. *Journal of Computing in Teacher Education*, 21(3), 94–102.
- Mishra, P., Koehler, M. J., & Henriksen, D. A. (2011). The seven trans-disciplinary habits of mind: extending the tpack framework towards 21st century learning. *Educational Technology*, 11(2), 22–28.
- Norton, P., & Hathaway, D. (2015). In search of a teacher education curriculum: appropriating a design lens to solve problems of practice. *Educational Technology*, 55(6), 3–14.
- Richardson, C., Mishra, P., & the Deep-Play Research Group. (2016). Navigating the tensions inherent in understanding creativity: an interview with Mark Runco. *Tech Trends*, 5(60), 415–418.
- Root-Bernstein, R. S. (2003). *The art of innovation: polymaths and the universality of the creative process*. In L. Shavanina (Ed.), *International handbook of innovation* (pp. 267–278). Amsterdam: Elsevier.
- Root-Bernstein, R. S., & Root-Bernstein, M. (1999). *Sparks of genius: the thirteen thinking tools of the world's most creative people*. New York: Houghton Mifflin.
- Sawyer, R. K. (2011a). *Explaining creativity: the science of human innovation*. Oxford: Oxford University Press.
- Sawyer, R. K. (Ed.). (2011b). *Structure and improvisation in creative teaching*. Cambridge: Cambridge University Press.
- Schön, D. A. (1984). Problems, frames and perspectives on designing. *Design Studies*, 5(3), 132–136.
- Starko, A. (2005). *Creativity in the classroom: schools of curious delight* (3rd ed.). Mahwah: Lawrence Erlbaum Associates.
- Sternberg, R. (2006). The nature of creativity. *Creativity Research Journal*, 18(1), 87–98.
- Tan, A. G., & Law, L. C. (2004). *Creativity for teachers*. Singapore: Marshall Cavendish International.
- Zhou, J., & George, J. (2001). When job dissatisfaction leads to creativity: encouraging the expression of voice. *Academy of Management Journal*, 44(4), 682–696.