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Abstract:

This article explores transfer of learning in the arts to non-arts learning. The analysis is presented in the context of theories of knowledge acquisition more generally. Behavioral and neuro-function processes are discussed.

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Conversation and Silence: Transfer of Learning Through the Arts

James S. Catterall

Introduction

The broadcasting of the “Mozart Effect” in 1996, albeit issued from the worldwide media rather than through the measured channels of scholarly reporting, initiated an upsurge of interest in learning in and through the arts. Scholars from disciplines as diverse as cognitive and developmental psychology, linguistics, anthropology, sociology, economics, education policy, neuroscience, and the arts took note. Both stalwarts and newcomers trained their lenses on whether or not, why, and how children gained benefits from participation and learning in the arts – particularly effects beyond learning in the disciplines themselves.¹ It would be fair to call 1996 to 2004 a decade of keen attention to learning “transfer” in the domain of the visual and performing arts. There is no sign that this research is losing momentum, although the ground is shifting; some suggestions for how the work itself might shift are explored in this article.

Conversation and silence. By “conversation and silence” I signal two important ways that children learn through the arts, among other metaphors for processes of learning. *Conversation* refers to both inner as well as interpersonal dialogues involved in the creative and expressive processes common to all arts disciplines. The inner conversation of artistic creation is a metacognitive activity in which the artist “steps back” to consider thoughts and thinking processes. (Bruner, 1960; Bruner, 1966). The interpersonal conversation can prompt creative reflection through a process that could be called *assisted* metacognition. I use *silence* in this discussion to refer to subconscious brain function and cognitive re-structuring – the neurological bridge that may link learning in the arts on the one hand with non-arts

related understandings and skills on the other hand. At least by inference, both mechanisms of learning through the arts receive attention and support in the research literature.ⁱⁱ

Conversations and Learning Through Art

Although conversation is by no means the only cognitive dynamic bearing on learning through the arts, I want to focus on two sorts of conversation or dialogue as fundamental ways that children can learn while forming and considering their creative expressions. Conversation is both a real and metaphorical perspective on individual and socially mediated learning. The conversations of interest are both the social exchanges and verbalized reflections surrounding art (the real) and also the conversations within the individual art-creator as his or her work takes form (the inner, *as if* conversation).ⁱⁱⁱ These conversations are readily seen in the context of theories of knowledge acquisition more generally. Vigotsky (1978), Lave (1988) and others point to the fundamentally social nature of learning, which the idea of the learning conversation surely reflects. The inner conversation is metacognitive in nature, involving coming to understand by reflecting on one's thinking and thinking processes (Bruner, 1960; 1966).

Arts-based learning conversation appears to be as useful a conception for unpacking learning through the arts as its scholarly documentation is thin. Researchers know artistic activity when they see it, recognize a finished product placed before them, and sometimes measure learning appearing to have occurred by the end of the process. But the intervening conversations are not formally mapped. Certainly a critical feature of learning through conversation is that dialogic processes can be fruitfully manipulated, both by the creators themselves as they work, and also by art specialists, classroom teachers, and parents who can help guide conversations in ways that promote learning. This scaffolding of the learning experience is recognized as beneficial if not critically important in research on teaching and learning. It's a topic that bears on the discussion that follows and one to which I return when I explore implications.^{iv}

Social Conversation and Learning

Social conversation refers to verbal interaction between an artist and observers of an artwork, or simply between or among individuals beholding a work of art. A timeless example of the instructional potential of social conversation involving art is the use of period art prints in social studies and history textbooks. Consider a case in point: Reflective questioning as well as interpersonal dialogue spawned by Picasso's *Guernica* may be expected to promote understandings, insights, and conjectures about the painting and its various contexts. Since the artist himself has neither said nor written much about this painting as far as the public record goes, the masterpiece is fertile ground for making meaning out of images and symbols. The game to some is, "What did Picasso mean by this or symbolize by that?" But the real fun may be in the interactive process linking painting and observer, or among observers examining the work. Apart from the obvious "big" interpretations of *Guernica* heralded in textbooks and art volumes, just whether or not Picasso meant particular things is only a touchstone to learning through the painting. It can be instructive for children to draw their own inferences from the work and place them in the context of contemporary conditions. It is natural to see in *Guernica* a depiction of horrible events occurring during the Spanish Civil War. But much more is suggested, for one example its foreshadowing of Hitler's rise on the continent. Here *Guernica* conveys a stark message about the future of war and the imminent fate of Europe.

Guernica depicts at the very least the cruelty and the near hopelessness of war. (Amidst the strife appears a female figure holding a lamp.) It is an extraordinarily complex picture. It can be examined artistically and sociologically, as well as politically – just to warm up. Its finished form and preliminary sketches could support an entire unit of historical study. But to attain rich learning through this or any painting, or through observing or participating in any work in the visual or performing arts, children generally need to reflect, discuss, and reflect again.

Such is the learning conversation – conversations that stand to benefit from more expert others to pave the way. Works of art may be variously inspiring

in their own right to children of selected dispositions, but some organization and leadership in approaching works of art in the name of learning seem essential. Mindful staring is a great beginning. Looking up the painting in a library (well, on the Internet for most) and reading critical commentary is a good way to start. Asking children individually or in groups to identify symbols within the painting and to articulate or write about their meanings is another. General discussions of how symbols function and what makes for an effective symbol are others. And asking children to write about an issue or issues involved with *Guernica* using literary metaphor and symbolism might cap a series of lessons.^v

All of this can be rich, hands-on, interactive, and inspiring work. It is an instructive model for learning through visual art and all art forms by analogy. However, it signals a set of explorations that have little likelihood of occurring without the guidance of a knowledgeable teacher or mentor, the art or general classroom teacher who knows enough about both history and art to connect works of art to a moment in history or to an age in science or literature. And devoutly to be wished is the teacher who knows the value of giving kids the freedom to assert and defend their own opinion without the burden of having to come up with an arbitrary and elusive single right answer. Absent these dispositions, we can hope for the teacher motivated to learn in these respects.^{vi}

The Inner Conversation

Producing a work of art engages the artist in an iterative exploration of ideas and emotions as the work proceeds. I call this the inner conversation of the creative process.^{vii} Painting, or playwriting, or composing, or any artistic creation can engage the artist in drawing on and deepening knowledge related to the artistic form (as examples, human anatomy, motivations and behavior, history, and the built environment). Intensive study and response to artwork by both artists and non-artists can elicit similar processes in the respondent; therefore the arts present a learning experience for both artist and audience.

Advances in the theories and methods of the cognitive sciences (and in the neurosciences discussed later) make possible new explorations of these prospects for the arts and their importance for human education and development. Each of the art forms engages in its own way specific physical, cognitive, and affective processes. Exploring the expressive activities, for instance, of drawing, sculpting, composing, dramatizing, choreographing, or writing poetry might add to the understanding of the cognitive processes engaged in learning and could yield insights important to the quest for effective educational practices. Opportunities to experience the iterative processes of “art making,” or inner conversations (continually refining ideas based on formative self-assessment) may be especially valuable for enhancing students’ abilities to learn both within and beyond the arts.

An example of inner conversation that most academic readers will recognize is the learning spawned by the writing process itself, where things are seen anew through the iterative processes of writing, reviewing, and revising as well as through processes of re-considering and re-conceptualizing. In addition and perhaps just as important, attempts to create a story or narrative commensurate to the expressive goals may engender learning of a different sort. This is growth in the understanding of relationships among the ideas important to the story and thus important to a full understanding of the theme or topic at hand. In the end, efforts to write almost universally prompt authors to say that they learned things about their subject by the very act of writing. This iterative process bears the hallmarks of the inner conversation. Yet we who seek scholarly understandings of artistic creation seldom listen in, at least not systematically.

Silence – Brain at Work

By *silence*, or subconscious transfer, I refer to neuro-dynamic learning processes that take place without any awareness on the part of the learner. The most visible example of this invisible activity pertaining to the arts is research that investigates learning in music and the consequential enhancement of spatial reasoning abilities. The 9 year-old piano student works with no awareness that she might over time be gaining facility for

fractions and proportions in her math lessons.^{viii} *Silence* more specifically refers to the neuro-function of involvement and learning in art and hypothesized processes of transfer from this learning. Research suggests that learning in art, and particularly in certain kinds of music, brings change to neural pathways and neuronal firing patterns. *The Rosetta stone for understanding transfer from learning in the arts to other domains may emerge as comprehension of the impact of arts-related neurological development on individual abilities to accomplish non-arts tasks.*

This is an area of research that is proving a magnet to cognitive neuroscientists and learning psychologists, as well as to education philanthropists. This work is tremendously exciting as well. It brings a novel scientific discipline to the study of art and promotes a fertile laboratory for exploring brain-function correlates of cognition and emotion.^{ix}

Neuro-scientific evidence to date should be characterized first as expanding understanding of the “human brain on art.” This sort of advance comes through imaging brain function while a subject learns, performs, or experiences art. A second characterization stems from hypothesis building in the complex area of the neuro-function of learning and resulting skill transfer. Even the most developed areas of research in the arts and cognition do not reach much beyond these boundaries. Consider as one point in evidence the fact that significant growth in sustained spatial reasoning ability and its consequential effects on performance in mathematics remains supported by only a small number of studies. Brain film has yet to map such relationships. Traditions in science hold that one comprehends human phenomena only through an accumulation of studies, and not through any single piece of research. Thus, music and spatial reasoning research, while intuitively satisfying and widely touted, is in an early stage of establishment.

Our abilities to discern, measure, and decode neural function at different levels of structure and degrees of resolution make linking neuro-function and learning in and through the arts most promising. Our understandings of the dynamics of brain chemistry grow apace. Important investigations unable to be done today will surely become feasible in a matter of very few years.

Returning to theory. This is a good point in the discussion to remind ourselves of the primary theoretical foundations of “silent” transfer of learning: i.e. change in knowledge, skills, dispositions, and orientations stemming from neural processes stimulated by learning in or participation in the arts. The central theory has two main points:

1. Arts learning and experiences, to varying degrees, reorganize neural pathways, or the way the brain functions. Extended and or deep learning in the arts reinforces these developments.
2. The development and re-organization of brain function due to learning in the arts *may* impact how and how well the brain processes other tasks.

This is the essential conception of transfer at the neuronal level. The crucial questions flowing from the theory are: which neuro-functions are impacted by learning in specific art forms, to what degree are these functions affected, what are the implications of such changes for skill or motivational developments in non-artistic domains, and do such skill developments matter. (For example, are the developments more than trivial or fleeting in character? Are the changes of any significance?)

Surely the piano learning example discussed briefly above conforms to this theory, even if alteration of neural pathways is not a full description or metaphor for the changes in the brain necessary to facilitate transfer. And many educators will notice the parallels between this fundamental theory of transfer and today’s established theories of constructivist learning (dating to the works of Jerome Bruner). These convictions hold that learning is rooted in interactions between new information and emotions on the one hand and existing cognitive structures on the other hand. The results of such interactions are new cognitive structures.

Summary and Implications

This article presents a brief sketch of two models of learning in the visual and performing arts with implications for the transfer of learning. One model is based on the potential fruits of conversations engaged in by the artist as a work of art unfolds. Examples included learning something by writing about it and engaging great works of art to learn history. Conversations speculate about meaning, debate symbol systems, and help make connections. Such conversations take place both within the individual and also between and among individuals.

The second model of transfer is based on the inevitability of autonomous cognitive change through engagement in art -- and the possible implications of such change on non-arts skills, capacities, and emotions. Cognitive restructuring is sometimes discerned through neuro-imaging, but changes in brain function remain both mysterious (and silent). The vital question emerging from this brain-based conception of transfer is not whether brains rewire themselves through arts experiences. They inevitably will do so, if only to an untraceable degree. The critical questions are rather whether or not, where, and how any such arts-inspired “rewirings” impact brain processes that are not directly involved in art. That is, can we draw accurate inferences about transfer of learning through the arts from brain images or from other measures of brain activity?

The important implications of this discussion are its suggestions for the conversations embedded in art making as well as in beholding works of art. The discussion speaks also to future inquiry. It is not about the practical consequences of transfer of learning through the arts that may be supported by research -- and not about individual decisions concerning when to initiate piano lessons. The implications point to what we (myself, anyway) suspect, but in most respects don't know, about the mechanisms of creative work and the processes of learning through creative expression. Whether we speak of brain function or the learning conversations of children, we know very little about what goes on in the mind while we create or confront art. If the conversations discussed here are important for how children create and what

they learn from creating, we need to know more about these conversations. The interactions of children around art should be a focus of research; so should the reflective processes of the young artist as a work goes from raw material to finished product, from block of clay to sculpture, or from children's story to dramatized play or dance. The individual is at the center of the creative process, and how young minds create in the worlds of art and beyond is worth up-close and continuing study.

A further implication is the suggestion of the potential benefits of understanding the role that others, typically teachers, can play in catalyzing or otherwise inspiring reflective conversations. Vygotsky would place this practice within a structure he calls scaffolding.^x If the learning conversation is important, it would behoove the attentive teacher, peer, or parent to nudge, beckon, guide, precipitate, and/or suggest regarding learning conversations. Understandings of the conversation process may point others in directions boosting their helpfulness.

And of course no one needs convincing that the marriage of art and neuroscience has staggering potential, yet it is still in its honeymoon. If art is about thinking, and thinking is about how the brain works, we should expect exponential growth over the coming years in our comprehension of the neuro-physiology of thinking and emotion, as well as about how the arts interact with more general capacities of the brain.

References

- Berk, L. E. and Winsler, A. (1998). Scaffolding children's learning: Vygotsky and early childhood education. *School Psychology International*, 19/2 pp. 189-191.
- Beck, R. J., Cummins, J., and Yep, J., (2006). Picturing peace: Local and universal symbols in three cultures. This issue.
- Brouillette, L. and Burns, M. (2006). ArtsBridge America: Bringing the arts back to school. This issue.
- Deasy, R. (Ed.) (2004). The arts and education: New opportunities for research. Washington DC: Arts Education Partnership.
- Dana Foundation (2005). Arts and cognition: Progress report on brain research. New York: Dana Foundation and the Dana Alliance for Brain Initiatives.
- Foley, K. (2006). Wayang and Gamelan as a tool of cultural learning: Indonesian puppets, dance and music in the classroom. This issue.
- Lave, J. (1988) Cognition in practice: Mind, mathematics, and culture in everyday life. Cambridge, UK: Cambridge University Press.
- McCarthy, K. et al. (2005). Gifts of the muse: Reframing the debate about the benefits of the arts. Santa Monica: The Rand Corporation.
- NAYC (1995). Scaffolding children's learning: Vygotsky and early childhood education. Washington, DC: National Association for the Young Children.
- Perkins, D. (1994), The intelligent eye: Learning to think by looking at art. Los Angeles: The Getty Trust.
- Peterson, R. (2006). Crossing bridges that connect the arts, cognitive development and the brain. This issue.
- Vygotsky, L. (1978). Mind in society. Cambridge, MA: Harvard University Press.
- Wells, G. (Ed.). (1999). Dialogic inquiry towards a socio-cultural practice and theory of education. Cambridge, UK: Cambridge University Press.

Endnotes

ⁱ Representative authors in these disciplines include the author (cognitive psychology and education policy), Frances Rauscher (cognitive psychology and neuroscience), David Perkins (psychology), Shirley Brice Heath (linguistics and anthropology), Kevin McCarthy (economics), Steve Seidel (sociology and theatre arts), Gordon Shaw (neuroscience), and Karen Bradley (dance). With its scores of omissions, this list surely does significant injustice to the field.

ⁱⁱ Reviewers of previous drafts have pointed to the unquestioned parallels between the learning conversation described here and both dialogic inquiry and dialectic processes.

ⁱⁱⁱ Other contributors to this issue offer views of the creative process that at least implicitly point to processes of inner and social conversation in the sense described here. Peterson (2006) works with the interpersonal or social construction of cognition. She also points to the neurological organization of cognitive development in ways complementing the discussion of *silence* in this article. Brouillette & Burns (2006) suggest that both inner and social conversations impact artists who become teaching artists – experiences that fold back to impact their own work as artists. And two articles discuss the creation and manipulation of visual images in reflective, metacognitive manners. Foley (2006) describes individuals integrating their accustomed visual imagery with imagery from other cultures as a reflective process of cultural learning. In a like-minded study, Beck, Cummins, & Yep (2006) explore rendering abstract ideas, e.g. *peace*, through photographic imagery in three different cultures. Like the photographer exposing five rolls of film in order to get something right, one envisions the young artists in this study conversing with their classmates to explore and converge on the right images.

^{iv} See: Laura E. Berk & Adam Winsler. (1995). *Scaffolding Children's Learning: Vygotsky and Early Childhood Education*. National Association for the Young Children. Washington, DC. Published in: *School Psychology International*. (1998). Vol. 19, #2, pp. 189-191.

^v Both David Perkins of Project Zero and Kevin McCarthy of the Rand Corporation probe learning involved in viewing works of art. Perkins, D. (1994). *The Intelligent Eye: Learning to Think by Looking at Art*. Los Angeles: The Getty Trust. Also, McCarthy, K. et al. (2005). *Gifts of the muse: Reframing the Debate about the Benefits of the Arts*. Santa Monica: The Rand Corporation, a project supported by the Wallace Foundation.

^{vi} See Gordon Wells, Ed. (1999). *Dialogic Inquiry Towards a Socio-cultural Practice and Theory of Education*.

vii This section draws on an entry in the volume, “The Arts and Education: New Opportunities for Research.” Washington DC: Arts Education Partnership, p. 7, 2004. Richard Deasy, Paul Goren, Steve Seidel and I participated in writing this and other cognition-related sections of the book.

viii The AEP agenda cited *op cit.* contributes a brief discussion of such dialogues as a process worthy of future research. (p. 7)

ix An illustration of new directions in research on learning in the arts is *Arts and Cognition: Progress Report on Brain Research*. New York: Dana Foundation and the Dana Alliance for Brain Initiatives (2005). Especially the featured essay by Michael S Gazzaniga, Ph.D.

x See NAYC: *Scaffolding Children's Learning: Vygotsky and Early Childhood Education*. National Association for the Young Children. Washington, DC, 1995.