The Interdisciplining of Computer Music

Kenneth Fields
CREATE
Center for Research in
Electronic Art Technology
ken@create.ucsb.edu

Abstract
This paper addresses the problems of maturation and deepening of the interdisciplinary field of computer music. Where disciplinary work is signified by the metaphor of vertical depth and characterized by words such as mastery and rigor, where interdisciplinary work is designated as horizontal or broad and described as boundary work between disciplinary establishments, we face the challenge of legitimization and theoretical framing within which the organization of computer music research may flourish.

We live in a society where the production of knowledge has gained primary value, and where interdisciplinary centers have become the locus of this production (Dogan). As knowledge structures mutate in a natural evolutionary manner, interdisciplinarities arise to challenge the adaptational ability of the modern university; the institution should welcome this stress test. This study draws from the literatures of interdisciplinarity discourse (Kline, Klein, Clark), philosophy of education (Phenix, Dewey, Snow), historical perspectives of the modern university (Muller, Nakayama), curriculum inquiry (Pinar, Slattery, Doll), and comparative analyses of theory and methodologies between disciplines (Kreiswirth). We have reached a critical mass of knowledge in and of the field of computer music; it is an opportune time for a reflexive critique of the cognitive and institutional nature of our inquiry.

BODY
The Aristotelian system of education in which we are heir underwent a number of changes in the Islamic world, the medieval European university built around Christian theology, and the modern university with its increasingly complex system of disciplines. Coincident with the new academic professionalism of the 19th century university was a discussion of the classes and species of knowledge. Indeed, a passion for the Swedish botanist Linnaeus' categorization scheme of herbs and plants inundated the post-Newtonian mechanical world of Lavoisier, Mendel, and Darwin. Auguste Compte also made a case for an evolutionary sequence of knowledges in his Hierarchy of the Sciences. A biological metaphor of organization was selected over the mechanistic and continues to this day to be the cutting edge of inquiry poiesis. The coding and informational aspects of the inert building material of genes and DNA that resonated with an information paradigm, has given way to a post-genetic interest in morphogenetic dynamics that "operate at all levels... of transcription activation, of translation, of protein activation... in the cytoplasm" (Keller). I report this for its importance to postmodern organizational discourses which are differentiated from structures and processes of hierarchical systems.

Reportedly, beneath the fragrant and specious surface of the herbs of the disciplines, lie the stems of epistemology, a serene, cool realm that doesn't suffer the constant photosynthesis of interdisciplinarity. Philip Phenix describes six realms (synthetics, synnoetics, symbolics, ethics, aesthetics, empirics) and four dimensions of meaning (the experience of reflective self-consciousness, the logical principles by which this experience is patterned, the selective elaboration of these patterns into productive traditions represented by scholarly disciplines, and the expression of these patterns by means of appropriate symbolic forms). As elegant as this system may be, contemporaneously to the publishing of his book in 1964, there was an unparalleled rise of blurring, genre mixing, fragmentation, and crossing of boundaries in the business of knowledge. The new rhetoric from the administration: "the future will bring widespread adoption of systems approaches from which fundamental improvement will spring" (quoted in Newell). The ancient episteme called for a search for the center, the modern, a rhetoric of relationalism, but the future calls for an experiential or process focused paradigm that can be based on writers such as Vygotsky, Lacan, Kristeva, Polanyi or Varela. This approach is informed by how a subject interacts in the inquiry process, not on ideal socio-philosophic structures imbued with a certain untouchable 'reality' that exists independently of humans.

The study of the history of the university as tied to historical patterns of thought can lead to a productive approach to the problems of the university of the future. “The idea of a university was a village with its priests. The idea of a modern university was a town - a one industry town - with its intel-
lectual hierarchy. The idea of the ‘multiversity’ is a city of infinite variety’ (Kerr quoted in Clark). Urban sprawl is a more appropriate metaphor for the contemporary university. Vestiges of the original scheme of disciplinarity may be in evidence, but the locus of cutting edge research is now happening in interdisciplinary centers of research that are problem focused, what J. Klein calls the “the Centering” of knowledge production. “The word ‘center’ implies centrality, but most of them are peripheral to the main academic enterprise,” while the traditional departments continue to decide the recruitment and program development. The variety of interdisciplinary centers are broad: computer music, woman and ethnic studies, international or area studies, peace, textual and discourse studies, media studies, urban studies, teaching and learning, transportation, global climate and environmental studies, cognitive and information sciences. More and more, specialized journals (CMJ, Organized Sound), professional associations (ICMA), centers for research, are serving to bind interests and activities across disciplines, outside of academe, and across political borders, leaving the disciplines as administrative categories and not much more.

There are very few examples of new integrative focused programs however - the result has been ‘additive’ rather than transformative (Klein). Two examples of integrative approaches, one regarding institutions and the other methodology are found on the European and North American continents. The new European University of Frankfurt/Oder, and in particular the Fakultät für Kulturwissenschaften, brings together history, social science, and the humanities - especially comparative linguistics and literature - in one unit and one course of study with areas of specialization. The focus is on research that will promote crosscultural dynamics in the new European Union (Weiler). In the United States, Gregory Ulmer's work attempts to implement ideas which resonate with a post-modern or 'Reconceptualized' movement in curriculum (Slattery, Pinar, Doll). Ulmer created a 'humanities laboratory,' which he calls the 'textshop' (Ulmer in Henricksen). His idea is that "the literary arts shift from being an object to being a subject of knowledge... they become a source for representing knowledge in other disciplines." In addition, the 'textshop' attempts to bring the study of 'invention' back into the curriculum by looking at the "relation of the art experiment to cognition and problem solving - 'The avant garde is the humanities equivalent of pure research.'"

The study of literature and semiotics has achieved such a monumental sophistication that they have broken through their 'objects' of containment. The technology of text has in every respect and more, paralleled the great transformation occurring in her sibling medias. For example, the technique of critical analysis has evolved from a practice of exegesis (commentary on sacred texts), to a radical hermeneutics that treats the 'world' as text, in the same way perhaps as musique concrete treated the 'world' as music. Examples of this linguistic enterprise can be found in the book Critical Textwork, where a variety of objects of inquiry (landscapes and cities, culture and world, silence and science) are subjected to methods of textual analysis (Parker). It is interesting to see how the language of the tradition is applied to the new object, how discourses compare notes (ex: acoustic ecology), how a retroaction from the object to the subject is accomplished, and how the new experience and language filters back into the tradition of scholarly study. The objective of science as a 'value-free,' acultural knowledge did not escape the 'infection' of hermeneutics either, especially as it became impossible to justify the validity of foundational assumptions based on the ideal of Euclid's original axiomatic prototype of demonstrable science (Reichenbach).

Surely, there was a hinge, a Varelian ‘microworld’ of autonomous self-organizing creativity when all seemed relative. But deconstruction has, as critics feared it would not, lead to a pruning and eloquent solutions, even solutions that keep us in that groove of creative organizing as opposed to new structuration. As disciplines have, as containers for 'objects' of inquiry, become empty, new collectives based on the integration of process and practice have emerged to form new trading zones: interlanguages, hybrid communities, professional roles, institutional structures, and new categories of knowledge (Klein). What is essential is a new focus on subjectivity (the experience of knowledge), and the linkage between biology, human drives, significations, and socio-philosophical ideas. Phenomenology can be positively identified as a profoundly influential area of discourse (a group of people who discuss, write books and have conferences), but even here Heidegger insists "it is first a "method of scientific philosophy... that is in tacit apposition to the basic tendencies of Western philosophy," highlighting a crises between explanatory and descriptive methodologies. There is a strong tendency by phenomenologists to rebuild philosophy in its ancient meaning as a science "which encompasses all the other particular sciences" (Heidegger). Phenomenology investigates specific intentionality structures, human activity: perception, experience, 'subjective conditions for the possibilities of presence,' or the capacity to initiate a search (Heelan).

Mediawork is coming to play a central role in the practice of a subject working with signifying material. Mediawork is a neologism of J. Kristeva’s ‘textwork,’ which can be approached through the interlanguages of biology, psycho-analysis, phenomenology, the arts and semiotics. A professor of linguistics at the Department of Texts and Documents at Paris University VII, Kristeva’s Revolution in Poetic Language is defined as the ‘exploration of the infinite possibilities of language.’ She has projected a psychoanalytic theory into a theory of text, resulting in a biologically based theory of signification. Conversely, she considers the
human body as a material medium, the expression, in psychoanalytic terms, of a complex formation of 'energy charges' and 'psychic marks' which are the result of the bodily constraints imposed upon primary drives and processes (Kristeva). The 'biological text' and 'textual body' are not merely metaphoric devices; Kristeva believes that the 'logic of signification is already present in the material of the body.' Her 'practice' of text (extended to image, music, or the combined modalities of signification - mediawork) aims toward that moment of 'bodily presence within the text. It is constantly 'calling into question finitudes by proposing new signifying devices.' Previously emphasized were the products of this process, the artifact: "Our philosophies of language... are nothing more than the thoughts of archivists, archaeologists, and necrophiliacs. Fascinated by the remains of a process... they substitute this fetish for what actually produced it" (Kristeva). The exploration of the practice of process is presently challenging creators of curriculum, paradigms of teaching, and the structuring of programs and educational agendas.

The concept of the Chora comes from the Greek and means space (area or land). To Kristeva, this is the space where human drives enter language. The semiotic chora is associated with rhythms and sounds, infantile, primitive, that set up the possibility of signification. The crucial aspect of mediawork, is that 'poetic language' can reanimate the semiotic chora, inciting contradiction in the subject between the biological semiotic chora and the socio-symbolic space; here discretized by Kristeva as the particulates, genotext and phenotext. This reactivation 'displays' the process through which all signification is possible. In a sense, it is an original copy of primitive inquiry dynamics, prior to the specific evolution of western discursive rules and structures. There are multiple holonomically related inquiry levels: the chora represents the inquiry space on the psychic level, the level where genotext interacts with phenotext; the text, where the subject interacts with the socio-philosophical space; the university, where the individual’s curriculum work (ergodic; ergo work and hodos path) interacts with the institution of knowledge; and the discourse of the ‘invisible college’ or professional association which is a transinstitutional space of inquiry. At each level there is a process of mutual ‘activation’ taking place between an agent and a ‘corpus’ (inquiry cytoplasm) - drives/body, subject/text, identity/university, and discourse/professional association. There are implications for action in the creation, organization and relationships of concerned professional associations.

CONCLUSION

The practice of mediawork is a tool for an experimental signification, working with the interplay of presence and absence of the physical aspects of media (sound, light) in counterpoint to meaning. In sound, sonification and music share aspects of practice in the same way that functional literature (science writing) shares writing practices with poetry, that the pie chart shares with abstract art. In genre blending, a sonification project can be made to sound beautiful, an advertisement can incorporate ambivalent signs - an important technique for attracting interest to the functional message. Mediawork is in a positive sense an ‘ambivalent’ practice; meaning a sign can be a pivot between functional and non-functional discourses. It should be clear there is no ‘science’ proper, in the study of subject; this is the whole point. The ‘logic of sense’ (Deleuze) as rooted in experience explores a wider field of possibility than previously attempted in signifying practice even as it explores concepts such as evidence and validity.

We have a better understanding of the connection between knowing and power. The ‘superior’ epistemology of explanatory types of knowledge is what Weiler intends when he wrote, "there is powerful and powerless knowledge." These positions decide the direction of new growth and reward certain types of scholarship, funding, the building of programs, studios and schools, academic appointments, and cultural status. The computer music community is unapologetically techno-centric, and happily isolated in the spare rooms of the music department - with a few farsighted exceptions. Interdisciplinary inquiry offers ample evidence from the histories of science and the humanities of hybrid communities whose partnerships resulted in a full independence of inquiry space (literature, terminology, conferences, institutional space, recognized domain of expertise). For this reason, it is important for many types of intellects to be able to scrutinize and map the complex relationships between the knowledge content of computer music and it's cognitive neighbors. The media arts (text, music, image, body) are surely aggregating toward an integrated field of inquiry under an umbrella of theory which focuses on issues of signification and discourses of subjectivity.

This study is based on my experience as the author of an independent Ph.D. program in Media Arts - the dissertation being the attempt to both define and implement an example of mediawork (Fields). The work points to practical optimizations in matters of research, curriculum, and institutional containers. A strong motivation for this work comes from the ethical drive for aligning the potential of our local domain of inquiry with the evolutionary enterprise of human knowledge as a whole. This demands an opening of our ‘inquiry space;’ in this we discover our co-inquisitors (players), we become situated amid knowledge's "interfaces of mutual constraint" (Polanyi); we maximize evolutionary potential by designing and realigning strategies of implementation.
BIBLIOGRAPHY


