Methodology

Thirty Minute Statement at my Ph.D. Oral Defense
Alan N. Shapiro, April 12, 2024

I will begin with some autobiographical remarks. I have a double educational background in the humanities and natural sciences. I studied the former at Cornell University and the latter at the Massachusetts Institute of Technology. Later in life, I worked for twenty years as a software developer. I had earlier studied literature and philosophy. My doctoral dissertation is grounded in the double perspective of cultural theory and informatics. I was always interested in the thinkers of poststructuralism. While working on IT projects, I was always thinking beyond the task at hand to wondering how software code could become more poetic and more like human language. How could code be understood and performed as an expressive, artistic, and/or cultural practice? How could ethics be embedded into software code?

On the side, I wrote and published a 350-page book about the science fiction TV series *Star Trek* from a hybrid humanities and informatics viewpoint. I considered *Star Trek*'s stories and futuristic technologies. Both have had enormous influence on society and culture.

In 2012, I changed careers and started teaching at art and design universities in Germany, Switzerland, and Italy. I have taught many seminars in media theory, future design research, transdisciplinary design, science fiction, posthumanism, and Creative Coding.

In my teaching, I have come into close contact with the Creative Coding movement. It is a movement of artists and designers who work with programming to make design projects and art installations.

In my dissertation, I present a way for cultural studies and philosophy to play an important role in what the nascent Creative Coding movement can become in the present and future. It is about Creative Coding, Phase Two. I lay out how poststructuralist theories of language can provide a basis for the project of transdisciplinary software coding. My thesis is that Creative Coding already has a strong conceptual premise in cultural theories and poststructuralist thinking about the radical uncertainties and ambiguities of human language, and in the chains of linguistic and cultural "signifiers" and "signifieds" of semiotics.

My dissertation is a cumulative doctoral dissertation. It consists of an Introduction, three Parts, and a Conclusion. Each of the three Parts contains three essays which were previously published. I added 150 pages of new writing to weave a coherent argument. Each of the three Parts contributes to the main argument, and is characterized by a specific methodological approach which I now allow myself to make more explicit, responding to the *Gutachten* (written evaluations) which criticize the lack of sufficient explanation of the methodology:

For each of the three Parts, I will give brief answers to three questions. First: Why did I choose these specific already published essays? Second: what is the methodological approach? Third: What does this Part show and how does it contribute to my main argument?

In Part One, through the cultural theory of hyper-modernism, I wanted to scrutinize the present and potentially future impact on society of advanced digital media technologies like Virtual Reality, ubiquitous computing, and Artificial Intelligence. I did this by writing in a hybrid way about the portrayal of the given technology in science fiction films and the realization of the technology in the so-called "real world." The essay "Mobility and Science Fiction" looks at the example of self-driving cars. The essay "Science Fiction Heterotopia" studies the examples of blockchain, 3D Printers, and moral algorithms and their connections to ideas about post-capitalist transformation of the economy. My theoretical perspective is explicitly critical of capitalism. I am a leftist, but I am also a critic of Marxism. I believe in reform not revolution. In the third essay, "What Is Hyper-Modernism?" I ask: What characterizes the cultural era of the present of the societies of late capitalism?

In Part One, it is about applying the epistemological method in historiography of a dialogical relation to the object of inquiry. There is a relationship involving loyalty and ambivalence between the past of the investigated object and the present of the investigator. The investigator suspends his own worldview, enters the worldview of the text and context of the artefact of the past, is temporarily "empathetic" to this text/background constellation on its own terms, then returns to an observer position enriched with insights gained from the engagement. I establish a dialogue between the postmodernist thinkers of the era of the 1960s to 1990s and the present time of the second wave of digitalization. The ideas of those thinkers are both enormously valuable yet outdated and in need of revision. I avoid either only repeating what the postmodernist thinkers articulated prior to digitalization or believing that a cogent theory of digital society can be developed without engaging with the earlier generation of thinkers. Hyper-modernism continues the trends of postmodernism, but now in digitalization.

For each of the postmodernist thinkers Cornelius Castoriadis, Donna Haraway, Michel Foucault, Jean Baudrillard, and Gilles Deleuze, I consider how their conceptual framework regarding how narratives and fictions exercise power and control in the media-technological society can be extended to the hyper-modern situation of algorithmic- and code-based governance. This prepares the arguments of Parts Two and Three by recognizing the value of looking into the poststructuralist ideas about language of Baudrillard and N. Katherine Hayles for illuminating software code as a transformative practice.

In Part Two, through the cultural theory of hyperreality, I wanted to enter deeply into Baudrillard's thinking to discover what needs to be rethought. In the essay "Baudrillard's Importance for the Future," I explain Baudrillard's main ideas of simulation and simulacra. I situate his concepts in relation to the history of philosophy. The most interesting part of Baudrillard is not the diagnosis of the simulacrum, but rather the challenge to the simulacrum. How can hyperreality be resisted or transformed? I develop the idea of "taking the side of objects." Baudrillard wrote about the poetic, resonant, and ambivalent qualities of language. Julia Kristeva called it "the revolution in poetic language," but now in the context of software code.[22] In the essay "Baudrillard and the Situationists," I extend these ideas by connecting Baudrillard to the activist practice of "the diverting of technologies" of the Situationists. In the essay on Baudrillard and Donald Trump, I demonstrate that the concept of hyperreality deepens the explanation of contemporary "post-truth" in politics and the crisis of democracy.

In Part Two, it becomes a question of what methodology to deploy to comment in an appropriate way on Baudrillard's system. Baudrillard's claim is that "everything is simulation," including his own discourse. It is imperative to apply a methodology that deals suitably with the singular subject-matter of the simulacrum. According to that philosophical tradition, there is no pre-existing "real." There is a "paradox of the semiotic sign." The mania of Western image culture to make exact technological copies of so-called originals produces more virtuality far away from the alleged original. How can one think "the real" when all is rhetoric? How can one speak of simulation when there is nothing outside it, no exempted location from which to observe it, only an "outside" which exists on simulation's own terms?

By reflecting on the method to apply to writing about the simulacrum or hyperreality, I try to avoid either regarding Baudrillard as the speaker of a "gospel truth" or putting his system in the weak position of being "tested" against some established external body of knowledge. My method is a deconstructionist reading of Baudrillard, to "read Baudrillard against Baudrillard." This is the method that Jacques Derrida applies when he reads Nietzsche against Nietzsche, Freud against Freud, and Heidegger against Heidegger.[23] He does not measure them against some standard from the outside. By grasping the system of the thinker from within, one discovers in which statements he contradicts himself or where there are weaknesses in his system.

My deconstructionist reading of Baudrillard leads me to discover my two key differences from him. First: To assert that "everything is simulation" is not empirically valid. Simulation is rather a hypothesis that makes visible new potential challenges to the hegemonic techno-cultural system. Second: The circumstance of digitalization – of digital, virtual, and cybernetic technologies – is now undeniable. Cultural theory and practice must operate within the situation of the digital. Thus, Baudrillard as a theorist of the rhetoric of code emerges. This prepares the argument of Part Three which will explore how resistance to the simulacrum can occur in the radical technological praxis of Creative Coding.

In Part Three, I wanted to investigate what the cultural theory of posthumanism would imply for the practice of writing software. I selected Hayles to comment on since she is a thinker of posthumanism who wrote a lot about software code and language. Hayles studies code as a transfigured form of linguistic expression. She calls for projects

to transform software code. I inserted excerpts from my work on *Star Trek*, where I had written about the characters Spock, Data, and Seven of Nine, and how they correspond to the three orders of cybernetics which Hayles writes about in her book *How We Became Posthuman*. In the essay "Software Code as Expanded Narration" and the excerpts from my book *The Software of the Future*, I elaborate the project of going inside the "black box" of computer science and transforming it from within, which is the activity of my near-future work. It would also be possible to find a foundation for this next step of Creative Coding in Derrida, Deleuze, Kristeva, or Roland Barthes.

Part Three is a study of the history and future of programming languages. It examines the successive paradigms of programming, including the "future design" paradigm of Creative Coding. It is an exercise in the philosophy and history of science, and the "science fiction" of the future of science. I ask: is computer science a science, a culture, or a technology?

I stake out a "middle way" method between seeing informatics as a science (like the media science of Wolfgang Ernst[24]) and a discourse-oriented approach (like "hermeneutic" cultural studies). I make the methodological separation between the scientific and cultural dimensions of computing. I ask what was the relation between "science" and "culture" in the work of Alan Turing? Programming has changed many times and can change again.

My work advocates for the importance and radicalization of Creative Coding. Creative Coding initiates the artistic genres of "generative art" and generative Deep Learning. In generative art, artworks are created using a self-governing system such as a computer, a robot, or an algorithm. The movement reintroduces visual creativity and poetics into informatics.

Ultimately, Creative Coding can play a major role in digital transformation and in shaping the future of society. Creative Coding can challenge the social and technological life-conditions of hyper-modernism, hyperreality, and anthropocentrism.

Creative Coding is where a line of code is an aesthetic artifact and not only an instruction to the machine. Creative Coding is where a new software layer opens as a performance space for music, poetry, storytelling, and dance. Creative Coding is programming in a range of subcultural activities such as interactive exhibitions and design-and-code experiments in Maker Labs. Creative Coding includes projects of visual- and natural-language-centered toolkits, and software poetry. As Vilém Flusser teaches, software code is related to the history and future of writing. Practitioners should reflect on associating code with textual writing.

In the present time of AI-based chatbots and text generators like ChatGPT, and of the paradigm shift in informatics from rule-based to pattern-based intelligence, the question is raised of how can humans forge a partnership with computer-generated "posthuman" language? We can seek a dialogue or exchange between posthumans and AI.

Creative Coding, Phase Two is about ideas and coding projects which go beyond the binary logic of the 0 and the 1 to new non-binary concepts. It is about regaining the in-between-ness that was lost in the shift from analog to digital. Some examples: the Q-Bit of quantum computing in software which can acquire the value of 0 or 1 by perceiving what is going on in a system in real-time; Walter M. Elsasser's concepts of a logic of similarities in databases and invisible data transfer in the information system of the living organism;

and Jaron Lanier's "phenotropic" on-the-fly programming while inside the executable. My students in Creative Coding develop poetry generators and music visualizers that explore the relationship between translation among media in universalizing digital code and the specificity of each medium.

Another dimension of my dissertation is my advocacy of science fictional thinking. An examination of the concepts of Baudrillard and Hayles, as well as the TV anthology series *Black Mirror* and science fiction films like *Blade Runner 2049*, *Ex Machina*, and *The Truman Show*, suggests that the boundary between science fiction narratives and the so-called "real world" of digital technologies has become indistinct. As the consequence of this blurring, science fictional thinking should be advanced as a principal mode of knowledge for grasping digitalization. My position is not a full-on embrace of all science fiction. Science fictional thinking, for me, is situated in a critical tension between the inventiveness of authors and the assimilating culture industry.

One example of what I mean by this science fictional thinking is what I have practiced during the last seven years in my teaching of "future design research" in Lucerne, Switzerland. I ask the students in Digital Ideation to write semester essays where they consider an advanced technology like Augmented Reality, Metaverse, Brain-Computer Interface, social media platforms, or robots together with a selected science fiction film that depicts a dystopian or utopian narrative about that technology and its effects on society in the present and future.

I can say self-critically that I have noticed that my approach to science fiction is strongly focused on content – and at times, I tend to use films and series for illustration. My way of writing about films is very detailed and phenomenological. I could add an additional layer of writing that is more about aesthetics and affect, the ways that the films imprint on viewers on more immediate, emotional, neurological, and nonconscious levels. I will need to engage more with the "affective turn" and with philosophers like Brian Massumi and Marie-Louise Angerer.[25]

In the emphasis I favor in my work, advanced technologies are principally to be understood through stories and representations. Yet I am not fully in the camp of discourse analysis. I underscore that there is a non-historical time-independent dimension of computing. This brings me close to the technological materiality or computer archaeology of the "Berlin school" of media science.

The connection between the two main ideas in the dissertation – "the border between science fiction and so-called 'real world' digital media technologies has dimmed" and Creative Coding – is the question of social change, of the road from dystopia to utopia. The dystopian technologies and human situations that were written about or enacted in science fictions novels and films have now been largely realized in daily life. With the notable exception of *Star Trek*, there are very few utopian science fiction films. This is regrettable for failing to inspire young people to imagine hopeful futures. For me, the critical theory of society and technology is a component of a larger worldview of pragmatic-utopian transformative design to make a better world.

From my European perspective of searching for better and alternative digital futures, my view is that digital media technologies in the mainstream are largely designed and implemented in dystopian versions led by American big corporation capitalism or Russian or Chinese totalitarianism. The project of Creative Coding informed by poststruc-

turalist ideas about the ambiguities of language connects with digital transformation. Since hyperreality is now instituted by code, the overturning of hyperreality can happen through coding.

Why is Creative Coding in its second phase important for a project of post-capitalism? An effective movement for digital transformation needs to be very thoughtful on two levels: application and code, or message and media. It must change things on the user level but also get to the heart of the matter. The net activism led by a figure like Geert Lovink, centered in Amsterdam and Berlin, had good post-capitalist ideas. It advocated for peer-to-peer and decentralization of the Internet, thus changes on the application level. But net activism never challenged informatics as it is on the code level. From the opposite direction, Andreas Reckwitz might say that Creative Coding is a product of the "creativity dispositive" of capitalism. Yet that would no longer be the case if Creative Coding were performed by a radical technology company with explicitly anti-capitalist and post-capitalist values and visions.

The project of a humanities-influenced informatics resonating with the spirit of the times has a precedent in the 1990s early cyberculture era when post-structuralist scholars saw *hypertext* as a practical application of formative deconstructionist philosophical and cultural theory ideas. The World Wide Web hypertext system invented by Tim Berners-Lee that enabled the explosion by orders of magnitude in the number of worldwide Internet users around 1995 was greeted as a revolution in the media of text with implications for the structuring of knowledge, education, and culture. Scholars like Jay David Bolter, Mark Poster, and George Landow were at the forefront of that tendency in the "digital humanities."[26] Novelists like Michael Joyce pioneered the genre of hypertext fiction in electronic literature.[27]

Another example of science fictional thinking is my own work. My Conclusion can be understood as science fiction theory. The project of transdisciplinary informatics building on top of the core numeric logic of computing to become more ambivalent, embodied, emotional, etc. is not the writing of a novel or a screenplay. It is a project in the so-called "real world."