

TECHNOLOGY, COGNITION, AND NARRATIVE: LITERARY EXPLORATIONS IN
NEUROMANCER, SNOW CRASH, GALATEA 2.2, ACCELERANDO, AND EMBASSYTOWN

by

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Technology, Cognition, and Narrative: Literary Explorations in *Neuromancer*,

Snow Crash, *Galatea 2.2*, *Accelerando*, and *Embassytown*

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Nonhuman intelligence is a topic of vigorous inquiry in the sciences, but how is it broached by the humanities -- especially in literary narrative -- and what does its method of presentation have to teach us about how the relationship between the sciences and the humanities is changing? To explore answers to these questions, I have established a new grouping of literary works, called "cybertech", and defined it as bounded within the system of fictional narratives which ask the following questions: 1) What can *ken* (be familiar with something or someone); 2) What is the range of what can be kenned?; and 3) How is what is kenned demarcated? By taking five contemporary novels as keystone examples of this grouping, I conclude that a thought experiment uniting the sciences and the humanities -- that which contemplates whether synthetic intelligences, and/or nonhuman biological organisms, might be able to develop "human-equivalent" consciousness -- is rich with possibilities for potential insights into human consciousness itself: what it is, how it works, and what the range is of what it can experience.

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INTRODUCTION | Cybertech Fiction, the Human Equation, and the Question of Nonhuman Consciousness

This dissertation will apply questions about cybernetics to specific American and British literary contexts of the past thirty years. It will explore, in effect, the fiction of artificial intelligence, and in so doing, it will contemplate the mirror which stories about synthesized cognition hold up to human, organic modes of seeing, knowing, thinking, and reacting. I will pay special interest to three angles of approach to these narratives: their authors' strategies of 1) establishing what, if anything, differentiates the artificial mind from the organic one; 2) expressing what type of information it is that a mind perceives and interprets; and 3) contemplating what means a mind uses to track, review, and annotate that information.

AHD defines "cybernetics" as "[t]he theoretical study of communication and control processes in biological, mechanical, and electronic systems, especially the comparison of these processes in biological and artificial systems": in other words, it is the science that schematizes the potential parallels between cognitive activities in the natural world and relevant (possible) equivalents in the domain of technological artifice. The word derives from the Greek for "governor", marking "control process" as the most important function in the definition. The root, in later derivations, has been shortened simply to "cyber-", which in turn is applied to anything having to do with synthetic control processes (in twentieth-century parlance, "computers"). Add to this the suffix "tech", which means "art", or "know how", and the neologism cybertech (which is presently in various and somewhat haphazard use) designates, etymologically: "the art (or science) of the development of synthetic control processes". Cybertech narrative, then, in a broad

sense, includes all novels about human-built automata capable of what might be called "rational" (complex comparative) governance: it may also, even more generally, include any novel that extrapolates the trajectory of the outcomes of technologies of computing, or that meaningfully questions any nonhuman intelligence's potential for consciousness.

I am interested in establishing a more specific use of this phrase ("cybertech narrative"), one which encodes into it an attention to the subtle distinctions available in reading the various ramifications of such portrayals. At stake is how the humanities frames what it considers *human*: does the word designate the current, biologically human species, or does it extend to a broader category, one which can include any entity that demonstrates what are traditionally considered "human" attributes: intelligence, complex empathy, ethical accountability, cultural sensibility, consciousness? Since this is the question at issue, cybertech is about more than the synthetic nonhuman: it also formulates a category logic that can be applied in considerations of the biological nonhuman, whether earthly or (purely in theory) extraterrestrial, and moreover helps in the building of the toolkit that biological humans employ to study their own modalities of intelligible perception and response. A strategy for answering these questions, however, cannot, arguably, be reliant entirely on the toolkits either of the humanities or of the sciences exclusively, or of any one area of inquiry within those broad designations, but requires a carefully situated synthesis of any number of their conceptual methodologies.

Bridging the Great Divide.

In discussing cybertech's relationship to the question of the "two cultures" in the academy, it is useful to explore questions of academic specialization, to review etymological constructions

of "art" and "know how", to examine how the issue of the "two cultures" is migrating and changing, and to recognize a model shared across the academy: that of programmatic code, whether biological, anthropological, linguistic, or cybernetic. In the afterword to Jan Rune Holmevik's 2012 monograph on gaming "identity experience" titled *Inter/vention: Free Play in the Age of Electracy*, Ian Bogost writes about ultra-specialization in the humanities that "scholars of Shakespeare or Homer are [. . .] susceptible to eccentric, absent-minded, blinkered commitment to a single object, one that goes well beyond reason and normalcy" (162). Bogost uses this example to make the point that such scholarly myopia "extends just as easily to science and engineering, fields in which dorkship and obsession drive insular, laser-focused infatuation with protein structures, algorithm optimization, polymer synthesis, aeronautical logistics, or any number of other specialities" (162). Bogost moves forward from this cautionary note to advocate for a golden mean in scholars' outlook toward their fields: that they be able to be, simultaneously, "both groupie and skeptic" (162), able on the one hand to cultivate the affection for a subject that makes such focused commitment to it possible, but on the other to stand back from it so as not to become entrapped in its constellation of partisanship. Bogost suggests that this is true no matter what the field, no matter who the scholar, and no matter what the sensibility. It follows, moreover, from Bogost's line of reasoning, that it is a habit of unbalanced fixation that has created and supported the lore that scholars in different divisions of knowledge have, at moments in time, found it difficult (if not impossible) to talk to one another. But was this ever really the case, and if so, is it still the case today?

The word *ars* in classical Latin designates not only art, but skill, craft, trade, technique, *etc.* (Greek *tekhnē*, from which "technology" derives, means something similar), and

philosophia, from both Latin and its Greek precedent, means not only the study of ideas, but the love (*i.e.* pursuit) of *all* wisdom (*i.e.* knowledge): it is a commonplace in intellectual history that there was no discrete division in antiquity between what we now designate as philosophy and what we now distinguish as science. How these two notions became entrenched in mid-modernity as distinct and irreconcilable categories is a story of Regency-era conceptual couture¹, but whether it is a progressive or regressive development (or simply a development) depends on one's loyalties. If it did ultimately result, in any event, in a moment when the humanities and the sciences had trouble communicating, it might explain the category divide between "arts" (the Humanities annexes the Latin word for capacity) and "technology" (and the Sciences the Greek) that ultimately produces the sharp conceptual gulf, perhaps still present in the popular imagination, between "human" (from the Latin word for person) and "robot" (from the Indo-European word for shibboleth -- the robot has lost access to the *belonging* card that would make it human, whatever that might be).

On the other hand, perhaps the reason such a rift evolved in divisions of the studies of knowledge in the first place is that those concepts potentially do, indeed, designate mutually exclusive and opposing categories: or at least sensibilities, wherein "arts" (and/or "philosophy") suggest abstracts that cannot be altogether apprehended, and "sciences" (and/or "technologies") imply discrete faculties of precision, with discernible data and results. But if these systems are thereby distinct, does it follow that they must therefore be at odds? Is it possible, instead, that they might be in a productive and mutually interactive collaboration? The software programmer seems uniquely situated to ruminate upon this question, for he or she is situated upon an apparatus whereby language is brought into performative conjunction with machinery.

The framing for a November 2007 talk titled "Computational Thinking", given by Clayton Lewis at the Denver Café Scientifique, offers some insight into the expandability of the idea-sets of computer science far beyond their home field:

Computational thinking is a concept about which many people in Computer Science, including their funders at the National Science Foundation, are excited. The idea is that there are certain ways of thinking about problems that have evolved in computer science but that EVERYONE should have a sense of. The premise, as stated by NSF Directorate Head Jeannette Wing: "Computational thinking is a fundamental skill for everyone, not just for computer scientists. To reading, writing, and arithmetic, we should add computational thinking to every child's analytical ability. Computational thinking involves solving problems, designing systems, and understanding human behavior, by drawing on the concepts fundamental to computer science....Computational thinking is a way humans solve problems; it is not trying to get humans to think like computers. Computers are dull and boring; humans are clever and imaginative. We humans make computers exciting."

Wing's position, here, seems similar to that of Edsger W. Dijkstra in the epigraph that opens Charles Stross' *Accelerando*: "The question of whether a computer can think is no more interesting than the question of whether a submarine can swim", but that's not the point of what we can do with computers, or of what computers have to teach us about ourselves. These seem,

at least from the perspective of our present moment, common-sense sound positions; they are the reality that science fiction about conscious artificial intelligences, and the imaginative pop-science that fuels it, circumscribes. Wing writes further on the topic:

Computational thinking is reformulating a seemingly difficult problem into one we know how to solve, perhaps by reduction, embedding, transformation, or simulation./Computational thinking is thinking recursively. It is parallel processing. It is interpreting code as data and data as code.[. . .] It is judging a program not just for correctness and efficiency but for aesthetics, and a system's design for simplicity and elegance.[. . .] It is choosing an appropriate representation for a problem or modeling the relevant aspects of a problem to make it tractable. It is using invariants to describe a system's behavior succinctly and declaratively.[. . .] Computational thinking is using heuristic reasoning to discover a solution. It is planning, learning, and scheduling in the presence of uncertainty.[. . .] It is making trade-offs between time and space and between processing power and storage capacity.[. . .] How do Completely Automated Public Turing Test(s) to Tell Computers and Humans Apart, or CAPTCHAs, authenticate humans?; that's exploiting the difficulty of solving hard AI problems to foil computing agents./Computational thinking will have become ingrained in everyone's lives when words like algorithm and precondition are part of everyone's vocabulary; when nondeterminism and garbage collection take on the

meanings used by computer scientists; and when trees are drawn upside down.

(33-34)

Novelist Richard Powers said in a recent interview, about his current experience at Stanford:

"Right now I've become obsessed with trees, partly because of being here and walking in these Western forests that are so awe-inspiring" (Vidergar). Given his range of knowledge about computer science, it may not only be the biological redwoods that he has in mind. The ambiguity raised by both Wing and Powers in their reference to the category of *trees* (Are they clad in bark or data paths? What about a computer's way of processing information would cause it to "draw" a tree "upside down"?) points to another site of cybertech: the conflation of the organic and the synthetic.

To some readers, those able both to follow and to endorse Wing's thread, all of this will sound wonderful; others, however, might be more skeptical. In any case questions remain, both about the present and the future, in contemplations of potential synthetic and other nonhuman, conscious agents. Again: even if such beings do not, cannot, and/or never have and never will exist in our cosmos, thinking about how we now do, and one day might further, infuse computers with proxy-intelligence is a means, as Lewis and as Wing suggest, of understanding ourselves as humans. Moreover, as they further suggest, the applications of such a means is a method by which potentially-no-longer-relevant disciplinary boundaries might be constructively eroded (this is a question of crucial concern to Powers in *Galatea 2.2*, as I will discuss later), or at least productively traversed.

In the abstract for a public lecture delivered December 3, 2008 at the University of Colorado, part of a program titled *English and Art*, presented in tandem with a companion component by Mark Amerika, William Kuskin writes: "[Interdisciplinarity] contains great promise--of a knowledge production that knows no bounds--as well as some threat: the making superficial of deep study, the dissolution of academic units, the marginalization of scholarship that does not have direct commercial application. It is not too much to say that the challenge facing the academy over the next twenty years is to negotiate a path between such promise and threat, that is, to maintain the legitimacy and therefore authority of the Humanities while imagining new ways of organizing their study". Amerika, in turn, asks in his abstract: "What does it mean to develop a remixological discourse? Does the Internet and its accompanying Web 2.0 / Youtube aesthetics signal the end of the arts and humanities as we have known them or are they part of an evolving media history that presents new opportunities for artistic and literary production?" Amerika sees "[t]he emergence of hybrid artworks that sample from the visual, literary, cinematic, sonic performance, and conceptual arts" as a new potential locus for forms of expression both containing and transcending the entire artistic corpus, and further asks: "Could these works of hybrid art revitalize the force of *literary presence* in contemporary culture? [. . .] Is a reconfigured literary presence in emerging forms of creative interdisciplinary research an essential aspect [of . . .] society?"

This is, of course, a whole other question, and one which suggests that the figure of the erudite, but marginalized, attentive literary reader of late postmodernity might eventually re-enter the mainstream, by bringing that erudition into a new conjunction with adapting media modalities. It is a proposition not by any means unrelated to the concerns of cybertech: those

which question how content, consciousness, and the means of their construction and deployment become interwoven, sometimes fruitfully, sometimes in a tangled mess. While Amerika suggests a directed merging of literary contexts into those of the visual arts and new (technologically informed) media, the voices of cybertech expand such a project to an intentional intermissiveness between all arts and all sciences.

Writing for *The New York Times* about Vikran Chandra's recent book *Geek Sublime: Writing Fiction, Coding Software*, science interpreter James Gleick begins by reminding readers of the presumptive two-way firewall splitting the academy in half, an awareness of which was established in 1959 by C. P. Snow, between the "two cultures" of the humanities and the empirical sciences. An ongoing theme for cybertech authors, this boundary line takes on altered dimensions in the present era, one which, according to Gleick's reading of Chandra, is no longer designated by the two basic types of cultural literacy posed by Snow (being able to discuss Elizabethan literature versus knowing the laws of thermodynamics), topics on which a quick glance at Wikipedia can make anyone sound at least superficially proficient, but rather comes down to who understands the fundamental building blocks of software code and who does not. Like Powers, Chandra "supported himself programming computers" while on the path to becoming a published novelist, and is therefore, also like Powers, uniquely qualified to bridge the Snowy chasm. Yet in some ways, coding is far more like composing literature than any empirically scientific activity, so if this is to be the new curtain of divisiveness, its endpoints have definitely migrated.

Gleick admires how deeply and poetically Chandra meditates on the sublimity of the generative spellcraft that coding makes possible: "the code I write," Chandra muses, "sets off

other subterranean incantations which are completely illegible to me, but I can cause objects to move in the real world, and send messages to the other side of the planet". This distinction between known and unknown designations, and ramifications, is crucial to cybertech: where exactly is the event horizon, the coastal tide, of legibility and intelligibility? Does the exceptional thinker or scholar somehow part the sea of unknowing to reach a promised land of enlightened certainty? Is this also the coder's job in the facilitating of extraordinarily capable new technologies? At what point do these technologies exceed the creator's ability to harness or control them? Is it possible that the tables can become turned: that the one who studies, innovates, and commands can become the one studied, altered, and mastered?

Gleick reflects, on the history of linguistic taxonomy, that "around 500 B.C., the ancient scholar Panini analyzed the Sanskrit language at a level of complexity that has never been matched since, for any language". What makes this so compelling to Gleick is that "Panini's grammar of Sanskrit bears more than a family resemblance to a modern programming language" because its metarules "call other rules recursively". And if the device code is synaptic, perhaps as the user is using it, it is reading, understanding, and in some sense contemplating the user. Gleick concludes his review of *Geek Sublime* with the following (arch-yet-provocative) axiom: "It doesn't hurt to be aware of code [. . .] One of these days code will be aware of us".

This phraseology might owe a debt to the kind of rich and informative assertion made by Fredric Jameson in his reading of J.G. Ballard's "Voices of Time":

[t]he universal fascination of contemporary (or poststructural or postmodern) theory with DNA--the exemplum of the concept of 'code' for Jean Baudrillard, for

example, who is himself an enthusiastic reader of Ballard--lies not only in its status as a kind of writing (which displaces biology from the physics model to that of information theory) but also in its active and productive power as template and as computer program: a writing that reads you, rather than the other way round. (*Postmodernism* 156)

It is this very conceit (or at least the contemplation of it) that forms a unifying arc across cybertech literature: it includes, within the reality of its fiction, the presence of software code (whether biological or electronic) *other than that of the natural, organic human*: it is "artificial" and/or "alien" code which, when compiled and executed on its respective hardware, appears, in some cognitive sense, "aware" of the users who access it. In the works most attentive to cybertech concerns, the uncanniness of that very possibility, for the humans who encounter it, turns out to be a significant aspect of the story. The fashioning, therefore, of a list of potential candidates for the cybertech members' roster can function largely by this litmus test: is some kind of (synthetic and/or biologically nonhuman) performative code portrayed in the fiction which, when run on its native hardware, can reasonably be supposed *potentially* to possess the attribute of "awareness" (*i.e.* analytic intelligence *and* consciousness/self-awareness/sentience/sophance/*etc.*) in the sense of the human or humanoid cognitive frame, and is that potential a concern for the biological people around it?

The fabric of cybertech's interaction with the "two cultures" question in the academy therefore spans issues of scholarly specialization; of linguistic constructions of the arts and the sciences; of possibilities of the migration, ambiguation, or elision of the previous dividing line;

and of a rallying behind the common ground of the crossdisciplinary modality of programmatic "code". Understanding this constellation in relation to other criteria for the identification of cybertech, such as those basic questions of human and nonhuman consciousness, helps frame the establishment of a set of works that can be considered cybertech. It is to this set that I now turn.

The Library of Cybertech.

In putting together a constellation of what can be considered cybertech, it is helpful to make use of three toolkits: identifiable requirements for inclusion, chronological situating, and questions typically produced by cybertech works. The simple presence within a story of a robot, cyborg, or disembodied AI is not necessarily enough for a work, under my working definition, to be considered "cybertech": what definitively certifies it as such is the debatable possibility that the software-enabled automaton is *aware* in the (previously only?) human sense, and *the question of whether or not it is* is foregrounded in the narrative. Some extendability should be allowed, in this criterion, however, to synch up cybertech with the partially overlapping entries that have, since the early 1980s, been placed under the heading of *cyberpunk*, especially in the usage in which cyberpunk has a special interest in the visually-rendered navigation of networked software systems: cyberpunk's (implicit or explicit) proposition that these systems themselves have a ghostly intelligence manifest in them, one which seems somehow at or past the cusp of consciousness, qualifies their treatment as cybertech as well.

A margin of flexibility is also useful in extending eligibility to works which address aspects of human cognition in relation to nonhuman intelligence in a speculative-future setting, whether or not they invoke cybernetics, and also those which, in a like setting, put physical and

mental enhancement and/or prosthesis in relation to constructions of identity and formulations of the consciousness of agency. There is a tandem then, also, with genres of the supernatural (*viz. Dracula*): how do narratives which envision non-human, but conscious, beings of an angelic or demonic character mediate the encounter between these and humans? When the approach involves subjectivities of cognition, this kind of narrative, as well, might be considered under the rubric of cybertech: indeed, the demonic (as is witnessed in *Neuromancer* and *Snow Crash*) is a prevailing trope for cybernetic Artificial Intelligence, and sometimes (in the aspect of malicious sociopathy, as in the infamous "Hal" syndrome) also a property of it. But so might the angelic be, or even the divine: Case, in *Neuromancer*, is sufficiently impressed by the Wintermute-Neuromancer superintelligence as to ask it if it has God-like powers. The answer? It *is* that it *is*; phrased in the vernacular of the Dixie Flatline, whose personality construct it adopts: "Things are things" (Gibson 270).

There is no specific (known) historical starting point for what might be called proto-cybertech (any literature that contemplates nonhuman consciousness): its precedents go back to mythological and scriptural sources, often as far back as an antiquity precedent to reliable dating. Including all instances of all folkloric categories that might fall under this rubric, such as ghost stories as a set, risks making it too broad to be useful, but the complex hybridity of golems, vampires, and animated corpses, as well as angels, demons, avatars, demigods, and similar categories, make stories eligible in which their identity-as-potentially-human is foregrounded (so *Paradise Lost*, for example, might qualify as proto-cybertech). Similarly, extending the grouping to all depictions of extraterrestrial life would mean a large majority of science fiction would be indicated (again: likely too broad to be helpful), but those narratives in which there is cause for

conscientious reflection about just how human-equivalent a given alien is make such a narrative a candidate.

Proto-cybertech's momentum makes a prominent showing in the nineteenth century, for example in two famous literary harbingers of supernatural fiction, *Frankenstein* and *Dracula*, which present an early instantiation of the two hemispheres of the cybertech planetoid: the human-created automaton who may or may not be conscious, and the biological entity which is clearly not human as the word is generally understood, but which is apparently conscious in the usual human sense. From the mid-to-late Victorian era up to World War II, proto-cybertech flourishes, not only in Mary Shelley and Bram Stoker, but also in the work of the following additional authors born prior to 1900 (chronologically by author's date of birth): William Douglas O'Connor (1832-1889), Ambrose Bierce (1842-1914), Gustave Le Rouge (1867-1938), S. Fowler Wright (1874-1965), David H. Keller (1880-1966), Karel Čapek (1890-1938; he coined the word "robot"), and H.P. Lovecraft (1890-1937).

In my vernacular, proto-cybertech transitions to cybertech over the course of 1948, when Norbert Wiener's *Cybernetics* is published (this is also the year that William Gibson was born). The history of cybertech literature, proper, therefore begins in 1949, and its authors might be any born in the twentieth century. This pegs it to the timeline of literary history that includes the late modern, mid-postmodern, and late postmodern periods (the last in the sense that Jeremy Green defines this era). I will adopt the term "mid-postmodern", in this present project, to describe a fiction predominantly of the 1960s and 1970s, so as to place that span in contradistinction to Green's "late postmodern", which in my usage will indicate primarily the 1990s and the first decade of the twenty-first century.

Green observes that "[d]uring the 1990s, attention [in anglophone literature] shifted to the interrelations between postmodern fiction and the emerging paradigms of systems, science, technology, and the posthuman" (32). In this project I will pay special attention to cybertech from around this time, a set I will call "late postmodern cybertech", starting roughly in the mid 1980s, and extending roughly to the present moment: but with caveats. The late postmodern is presently morphing into something else, and it remains to be seen exactly what. Moreover, the fiction of the mid-'80s had aspects of both periods (as perhaps all postmodern fiction does, but for the sake of disambiguation, I will contemplate the '80s as particularly ambiguated). I have assembled, however, with a mind toward a full arc of cybertech chronology, a grouping of novels and short stories by year of publication, from 1949 forward, each of which appears to include at least one element (character, scene, reference, *etc.*) that approaches or meets the criteria of cybertech. Selections from this grouping include the following: Isaac Asimov's *I, Robot* (1950); Richard Matheson's *I Am Legend* (1954); William S. Burrough's *The Soft Machine* (1961); Stanisław Lem's *Cyberiad* (1965); Arthur C. Clarke's *2001: A Space Odyssey* (1967); Philip K. Dick's *Do Androids Dream of Electric Sheep?* (1968); Martin Caidin's *Cyborg* (1972); John Brunner's *The Shockwave Rider* (1975); Octavia Butler's *Patternmaster* (1976); Vernor Vinge's *True Names* (1981); David Brin's *Startide Rising* (1983); William Gibson's *Neuromancer* (1984); Pat Cadigan's *Mindplayers* (1987); Marge Piercy's *He, She and It* (1991); Neal Stephenson's *Snow Crash* (1992); Richard Powers' *Galatea 2.2* (1995); Peter Watts' *Starfish* (1999); Charles Stross' *Accelerando* (2005); Stephen Graham Jones' *Demon Theory* (2006); Ian McDonald's *Cyberabad Days* (2009); China Miéville's *Embassytown* (2011); Helene Wecker's *The Golem and the Jinni* (2013); and Richard Farr's *The Fire Seekers* (2014). There are many more.

The degree to which each of this grouping's members, however, might be considered cybertech varies in proportion to how central a concern the cybertech issues are to the work. In Frank Herbert's *Dune* (1965), for example, they are also present, but oblique, but in Asimov's robot novels, they are supreme. Richard Powers' *Galatea 2.2*, a literary novel and (as Green notes) a latter-day Frankenstein tale, is, by virtue of its (non-)genre framing, a distinct outlier within the genre-suffused cybertech grouping (although the most beloved novels of Burroughs, Pynchon, and Vonnegut might be included with it), and this invites the question of why literary fiction has not itself turned more often to these themes, in a world in which (as William Gibson has noted) the technologies of cybernetics are (up to a specific point) increasingly more fact than fiction. The questions raised by all of these fictions (and the facts or fantasies they contemplate) might be these: a) Are there mature intelligences (meta-epistemic modeling frameworks) other than the human? b) Is the specifically human intelligence (in the biological sense signifying that it is present in the *homo sapiens* species) an activity that can be shared by nonhuman entities (if yes, then our particular type of intelligence is not, in fact, uniquely human)? c) Can human intelligence be replicated (if it is a property also attributable to the nonhuman) beyond the human sphere, or ported/adapted (if it is a uniquely human property, but a subset of a category of intelligence that exists beyond the human) to the nonhuman? d) Is there such a thing as a self-aware (sentient, sophant, meta-intellectual, *etc.*) *consciousness* that is distinct from *intelligence*, and if so, where does this property manifest (in a material aspect, or -- as in dualism -- via a metaphysical parity)? e) If there is such a thing as sophant consciousness, is it unique to humans? The set of what might be considered cybertech, then, is best understood via categorical (brooking of the question of nonhuman or augmented-human consciousness), chronological (1949 to the

present, with late postmodern cybertech beginning with *Neuromancer* in 1984), and interlocutional (questions of the ramifications of cognitive technologies) aspects. To examine these elements in more focused detail, I will therefore select a more specific sample set for the purpose of this study.

Chapter Abstracts.

In order to consider in detail how late postmodern cybertech asks these questions, I have chosen five novels from that context to examine in detail over the course of this dissertation -- *Neuromancer*, *Snow Crash*, *Galatea 2.2*, *Accelerando*, and *Embassytown* -- employing them as examples or samples from which to extrapolate tentative generalities for the cybertech movement. I will discuss, in the following abstracts, how each of four subsequent chapters will bring to bear what each of these works contributes to an understanding of cybertech. The first chapter will explore all five novels; the second will explore *Neuromancer* and *Snow Crash*; the third chapter will explore *Galatea 2.2*; and the fourth and final chapter will explore *Accelerando* and *Embassytown*.

In the first chapter, I will discuss various features of commonality across the five novels under review, whereby each distinctly and demonstrably includes three core elements:

- 1) an invocation of computer science pioneer Alan Turing and an example of a cybernetic automaton of the variety envisioned by him;

2) a (metamythological, metafictional, metatechnical) set of references to, and/or a modeling of, the the Cretan Labyrinth and related tropes, which model the expansive depths of possible knowledge;

3) a similar concern with the Arachnoid Web, which has expressed, since antiquity, how cognition demarcates, tracks, and makes use of what it has designated as its home territory of *known* information.

The shared inclusion, in each novel, of this constellation of features will support a view of cybertech that frames it as the literature of the potentially portable architecture of cognition itself. The figures of the second and third elements have a special interrelationship, one which reflects the cognitive calculus by which uncountable sets are recovered as partially countable.

In the second chapter, I will consider *Neuromancer* and *Snow Crash* in relation both to the movement of *cyberpunk* -- and some of its already-articulated expansions and extensions -- and contemplate them in the context of the new grouping: *cybertech*. Marshall McLuhan's theories of media will be presented as prefiguring the framework of this fictional application of the extension of the media-mind, and also as still contemporary in its deciphering; some more recent contributors to this dialog (Friedrich Kittler, Bernard Stiegler, Geert Lovink) will also be introduced. I will proceed, from here, to a discussion of the existing discourse of cyberpunk, and to a critical review of, and new textual readings of, both *Neuromancer* and *Snow Crash* in relation to the cybertech framework. I will consider how *Neuromancer* intermingles natural and technological imagery to suggest seepage between the categories, and how the figure especially

of the city-space (in relation to versions such as those offered by Michel de Certeau, Alfred Kazin, and Walter Benjamin) becomes, in *Neuromancer*, a cipher for human cognition and the replication of it. In navigating the turbulent East-to-West-Coast redeye between *Neuromancer*'s Sprawl and *Snow Crash*'s burbclaves, I will place these novels within a continuum that arcs from the mid-1980s into the mid-1990s, which I will recognize as a transition from mid-postmodernism to late postmodernism. I will then articulate *Snow Crash* as a Bachelardian blizzard-scape (in this case rather reminiscent of a Hollywood Sign snow globe) whose precipitation embeds a cheeky regurgitation of *Neuromancer*, exploring how form in cybertech, such as *Snow Crash*'s modality of pastiche, can reticulate function, such as a cognitive system's remodeling of information it has apprehended so as to render it as native to its operating system.

In the third chapter, I will contemplate *Galatea 2.2* through the lens of mythological, theoretical, and (meta)literary formulations of the automaton, centering on the artificial consciousness in *Galatea 2.2* as it functions as a container for various narrative conceits of the author/narrator. This chapter will explore especially the aspect of cybertech that interests itself with emulated (or mirrored, replicated, *etc.*) cognition; it will also investigate the seepage between narrator, character, historical context, and conceptual palimpsest that suffuses the late postmodern moment, with a serious attention both to mythological and to scriptural sources. I will frame *Galatea 2.2* in the tradition of the lineage of fiction that addresses the construction and (problematic) education of (conscious?) automata (such as Mary Shelley's *Frankenstein*), with a detailed look at its self-declared mythological precedent in Ovid's *Metamorphoses*. In the service of this, I will apply a resurrection of the theoretical framework of Roland Barthes to contemplate the idea of the "threatened logical unit", the self-protecting and self-replicating