Foreword

Whether made of clay or metal, robots have captured the literary imagination for centuries. From the golems of Jewish lore to the mechanized toys of Victorian society to the zippier robotic characters of more recent science fiction, robots have played a major if ambiguous role as inferior helpmates or overpowering monsters. As cultural "doubles" to the humans that create them, some basic questions can be extrapolated. What should robots look like? To what extent are robots like humans? What characteristics should be built into them? What attributes do they possess by virtue of being "entities?" If they become sentient (or if they don't), what "legal rights" and ethical considerations should be extended to them? These questions have become even more prominent in the first decades of the twenty-first century, where automation is common and smart devices—robots of sorts—are ubiquitous in our daily lives.

The chapters in this book, and the publication of the book itself, are further indicators on the historical dial of the continuing but now rapidly expanding interest in, and development of, robots as autonomous beings in contemporary society. One immediately notes that many of the chapters in this book are concerned with topics, attributes, and/or relationships generally associated solely with humans: intentionality, legal and ethical rights, feelings and emotional states, gendering education, childhood, media presentation, interface, mind, and the (dis)association of robots with androids and cyborgs. Regarding the latter, for our purposes perhaps one minor point that may distinguish robots from their alt-species counterparts is that not only are robots completely mechanical, but they are, at least in the popular mind, almost always made to look mechanical—as opposed to androids (who are made to closely cleave to human anatomy and features, and imitate their behavior), or cyborgs (who *are* already part human, as well as part machine).

i-Robot [1]

For Nathan Riggs

i like this robot. This robot

has an ethos all its own.

It speaks to us, in the openness

of its parts, in the honesty of its loose

assemblage. Rhetorically it is almost

authentic in its incoherence,

in its semi-arranged collection of objects

hanging and working together, almost

persuasive in its happenstance, its e-mergence,

a (dis)semblance of the human

way that it exists and moves

through the world. I like

this robot. This robot

has an ethos all its own.

Despite the more obvious differences between humans and robots, most of the chapters in this book, as in science fiction and popular culture generally, seem to assume some point(s) of similarity between robots and humans, in the questions the chapters ask and the lines of inquiry they pursue. (Humans have a way of doing that.) We thus should note here that whether intended or not, the comparison is ultimately based on the concept of "*autopoiesis.*" As Humberto Maturana and Francisco Varela, who coined the term, wrote:

An autopoietic machine is a machine organized (defined as a unity) as a network of processes of production (transformation and destruction) of components which: (i) through their interactions and transformations continuously regenerate and realize the network of processes (relations) that produced them; and (ii) constitute it (the machine) as a concrete unity in space in which they (the components) exist by specifying the topological domain of its realization as such a network. (1980, p. 78)

Interestingly, in the research in different fields that ensued, *autopoiesis* (Greek: *auto* = "self," *poiesis* = "creative") is meant to apply not only machines (in this case robots) but also human beings (e.g., in A.I, cognitive science, linguistics; studies of mind and consciousness; and biological life processes of cells themselves). In research in both robots and humans, autopoiesis is meant to describe and comprehend the

material functioning of self-organization, self-reproduction, and the self-realization of meaning, all of which are necessary for existence.

Attachment Function

my attachment function
no longer works—this is how
i used to feel
the attachment function
no longer feels—this is how
i used to work

Autopoiesis, whether accounting for the human mind and consciousness in mechanical terms, or robots in human terms, is foundational to the many fields that use it. Yet it is also highly controversial. It is quite plausible to conjecture, for instance, that autopoiesis is at least to some extent a result of understanding and describing life metaphorically. One dimension of the study of robots developed implicitly but usually not covered overtly would be relations between autopoiesis and metaphor. This is not to suggest that autopoiesis and the fields that have adopted it are not "real"—not more than their relations in/as language, no more than their saying. In an equally controversial argument, Richard Boyd (1993) asserts that unlike "literary metaphors" and "heuristic metaphors," "theory-constitutive metaphors" in science (e.g., in cognitive sciences, he argues) may actually lead to causal relations in the physical world; in these rarer cases, the "open-ended" metaphor (one of the conditions) becomes the basis of continuing development of knowledge in the field. On the other hand, "heuristic metaphors," according to Boyd (1993), like literary metaphors for logical positivists, lead nowhere, are nonsense (Ayer, 1952).

A.I. Talking

the phone hung up my face.
it's calling you back
to say goodbye.

If robots are understood, in science as well as in the chapters to follow, in terms of autopoiesis, the explication of life processes (whether biological or mechanical) may be understood to be grounded in the metaphors of autopoetics, and autopoetics to be a new branch of poetics, which of course includes poetry. Robots are poems

written by humans in languages and/as technology, and as Heidegger (1975, 1977) *might* point out, are "enframed" but potentially free by virtue of being poems.

Being Robot

we are robots, we

are the ephemeral ones, we

are the expendable ones, we

stand in reserve, waiting, we

are at hand, ready to serve, we

are the useful ones, we

are defining our being, we

we are robots, we

are the permanent ones, we

are the natural ones, we

stand in the Opening

of our Presence, we

shine in our own Being, we

are you, and beyond this world

In fact, just as the Greek word *techne* means "craft" or "art" but also is the root of English "technique" and "technology," both "autopoiesis" and autopoetic etymologically and philosophically derive from *poiesis*, which includes poetics as well as poetry, as "making." It is thus "natural" that a *similarity* of affect, values, perception, and experience would seem inherent in and shared by robots as "poems."

Media Eye

mediated

meditation

modifies minds

Robots as poems leave may questions for these chapters, and humans, to ask. For the chapters here must assume some degree of autopoiesis, and thus at some level concern issues of embodiment, cognition, consciousness. Like poems, robots

are "soft machines" (Porush, 1984) — but robots require a lot more work to realize their potential as technological entities that are aware, self-sufficient, and integrated into their human surroundings. That is the work to which these chapters contribute.

Some of the questions asked in these chapters are about whether robots influence gender identification in education, or feel pain.

A Computer File Named Dorothy[1]

I dated a file named Dorothy, created

worlds in her name; but needed more space,

new memories to save, new files to live.

(After all, although the universe expands

at astronomic rates, it's slowing down,

and there is only so much space inside machines).

"Destroy Dorothy: Confirm," the computer responded.

But what if she should die? I thought, and asked

aloud; what if when I push this button

she should really disappear

from the disc of the earth, constantly rotated, read

in this dark machine drive of the universe?

What if this cold, dumb, personal computer

should read and wholly misunderstand, and take me

literally, as impersonal as itself, and her atoms

be scattered through magnetic fields, dispersed

along the wires, and she should vanish mid the glitch

and circuitry of stars, drive lights red

shifting, every trace (of her) erased

forever. "Destroy Dorothy: Confirm," it repeated,

blindly blinking. Destroy Dorothy? I needed

more space, new memories to save,

new files to live. But Oh I

could not confirm it could not confirm it....

Other ancillary questions are whether robots would ever experience lust, or feel love? These are not silly questions, for the ability of robots to handle sexual urges, possess empathy, or feel love, may be essential in the development of ethical values and systems for robots in relation to each other, and to us.

The Beautiful Robot Who Stole My Heart and Parts[2]

He spoke. And drank rapidly a glass of water -E. E. Cummings, Next to of course god America, 1994

"Everyone desires a beautiful robot

to love as themselves--something

in bronze, perhaps, a strong bionic blonde

lying on her side, powerful tan thigh

gleaming in the sunlight, hot wet alloy

glistening in the grass, catching the eye,

her hard body pulsing electric desire,

her lights blinking her come on, her for-hire.

To simply jackup the swivel hips

and secure the leather straps, to insert it

in the lovebox that hums, waiting only for you,

to adjust the tension knobs and push the button,

the pelvis slowly rotating on its axle,

the chassis moving up and down, the gears

squeezing, grinding out raw love, a dear,

so chilly, so sore, so beautiful, a real

convenience, lightweight, portable, easy, efficient;

no attachments necessary, no maintenance required.

No? Then something in silver today?"

A big question from the point of view of autopoiesis, as well as perhaps a deeply embedded assumption in chapters in this book, is whether and/or how robots "reproduce" (in their genesis; in graphic interfaces). From a "poetic" perspective, another way of asking this question is whether robots can write themselves? Certainly,

their programming as "procedural rhetoric" (Bogost, 2007), if not traditional poetics, are also prosodic forms, a kind of technical poetry that Walter Benjamin (2008, p. 172) predicted. We know that computer robots like Racter (1984) can write their own poetry when they are properly programmed with a lexicon, syntax, and otherwise linguistic *indeterminacy* (this puts one in mind of the use of imitation in the Turning Test to create the simulacrum of human-like interaction). But systems seemingly approaching the ideal of autopoiesis, such as Google's facial recognition or IBM's Watson based on cognitive computing, interact and learn. Researchers are working hard to exceed limitations—by probing the kinds of issues in the chapters of this book; but robots are still in their infancy.

S.O.S. …---… To Any Robots in the Vicinity

infantile device,

primitive metal,

analogue box

trying to commun-

icate with other inhab-

itants that live on this flat plane,

spread out across the table

made of pine boards

and old logs buzzing

in the fireplace—

first the flashlight,

then landline, camera,

iPod, iPhone, TV,

even the wrist watch

some owner has taken off

and laid down haplessly,

activated, buzzing—

the old player, joy stick,

sending and resending

the only simple signals

it knows in distress,

S.O.S., S…

trying to catch-up,

trying to connect,

lonely, surrounded by

intelligent devices,

but merely magnetic,

buzzing, buzzing

the only language it knows,

its messages of love

never received, answered

Whether robots can meet the ideals of autopoiesis, including mechanical reproduction, whether they can write themselves as poems, the chapters in this book egg us on to continue asking the necessary preliminary questions. In their content, the authors may not only assume the metaphors and relations embedded in the etymology of autopoiesis, but go beyond them, to develop new metaphors, questions, and insights; the scholarship, research, science, technology, to write and implement new poems, science—the sign and "duty" of every good theory-constitutive metaphor, of every good poem. The hope is that the fullest meaning of the term *autopoiesis*—including its etymology and usage as both poetic and scientific metaphor, in human as well as mechanical terms—will be recognized and remembered. The chapters in this book go a long way toward what some may consider our only hope for survival with man-machines.

i-Robot [2]

For Nathan Riggs

I recognize the mind

of this robot. It sees

what I see; it gets what I

get; it wants what I

want: the creative poet

making, the technical skill behind

it, combined in it, emerging in

and through it, in every connection,

in every bolt and wrapped wire.

Rhetorically, I see what it sees; I

get what it gets; I want what it

wants. I recognize the mind

in, behind this robot: it is mine.

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ENDNOTES

1. Revised from original publication of Katz, S. B. (1991). A computer file named Alison. *Postmodern culture* 1, No. 3. Retrieved May 29, 2017 from http://muse.jhu.edu/journals/pmc/toc/pmc
2. Revised from original publication of Katz, S. B. (2004). The beautiful machine." *Star*line*: *Science fiction poetry association* 27:1 (Jan/Feb), 15.