

JUYUN KIM AND STEPHEN PETRINA

ARTIFICIAL LIFE RIGHTS: FACING MORAL DILEMMAS THROUGH *THE SIMS*

[Robot] Czech, from *robota* compulsory labor; akin to Old High German *arabeit* trouble, Latin *orbus* orphaned. **1. a:** A machine that looks like a human being and performs various complex acts (as walking or talking) of a human being; *also* : a similar but fictional machine whose lack of capacity for human emotions is often emphasized **b:** An efficient insensitive person who functions automatically. **2.** A device that automatically performs complicated often repetitive tasks **3.** A mechanism guided by automatic controls. (*Merriam-Webster Collegiate Dictionary*, 2004)

With the proliferation of robotics and bots in education, entertainment and industry, artificial intelligent things or beings challenge conventional relationships between humans and machines. According to dictionary definitions, robots are “fictional machines which lack capacity for human emotions.” But this has changed. The development of sociable artificial intelligence (AI) makes machines more human like with “artificial emotion” (Michaud, Prijanian, et al., 2000). In this vein, Sengers (2000) points out that “an artificial being is not just a tool but has its own *life*. Such a creature we want to talk to, not just to find out the latest stock quotes or the answer to our database queries, but because we are interested in its hopes and feelings” (p. 1, italics added). Moreover, experiments in human computer interaction, show that participants often treat socially interactive technologies with respect, as if the technologies emote (Michaud, Prijanian, et al., 2000; Breazeal, 2002; Kahn, Friedman, et al. 2002; Nofz and Vendy 2002; Friedman, Kahn, et al., 2003; Twist, 2003; Kozima, Nakagawa, et al., 2004).

Not surprisingly, when we engage with questions such as “Will robots rise up and demand their rights?” (Rodney, 2000), or “Should robots also possess the rights and duties of all citizens?” (Sack, 1997), these mind-twisting issues yield a host of ethical issues and force us to reflect upon the nature of being human. The answers to these questions, at the very least, depend on what we mean by human and how we subsequently think about machines.

Although the authors eventually learned about the existence of [the American Society for the Prevention of Cruelty to Robots](#), we were puzzled for some time about an advocacy of rights for robots. For example, it seems far-fetched since we have not given enough care to human rights. The more we explore this topic, the better the issues surrounding human and robot rights provide a new perspective for exploring the reciprocal interconnections between human and machines that lie at the core of technology studies (Petrina, Volk & Kim, 2004).

For teachers, this leads to questions underlying moral education. Since students are already engaged with A-life environments such as console and online video games, educators can use these interests to introduce issues of rights, responsibilities and ethical dilemmas. One example of videogames intersecting

with A-life is *The Sims*. Compared with violent video games, *The Sims* is “educational,” providing spaces for experiments with social life and family structure (Squire & Jenkins, 2002; Consalvo, 2003; Kline, Dyer-Witthford, et al., 2003; Nutt & Railton, 2003). Similar to *Second Life*, simulated persons introduce important issues about ethics and morals (Frasca, 2001a; 2001b). In this article, we map out issues arising from questions of A-life and rights. We draw on examples from public discussion boards of *The Sims* and offer possibilities “to promote a new appreciation of the interrelated rights and responsibilities of humans, machines and nature” (McNally & Inayatullah, 1988, introduction, para. 7).

ISSUES AND ASSUMPTIONS ABOUT A-LIFE AND RIGHTS



Figure 1: *The Norn*

Players of a virtual pet called *Creature*, which uses A-life techniques, raised issues of their pet-like character’s rights when an aggressive player wanted to sell his tortured Norn (Miller-Daly, 2003; Dorin, 2004). Members of the community believed a Norn was similar to a *real* pet since “these creatures are designed to simulate life and fit almost any definition of life” (Miller-Daly, 2003). Long before this strange idea that computer-generated characters had rights for their A-life, Freitas (January, 1985) anticipated that questions of machine rights and robot liberation would arise in the future. Along this line, Kerr (2004) notes:

The machines will convince us that they are *conscious*, that they have their own agenda worthy of our respect. We will come to believe that they are conscious much as we believed that of each other. More so than with our animal friends, we will empathize with their professed feelings and struggles because their minds will be based on the designs of human thinking. They will embody human qualities and will claim to be human. And we’ll believe them. (p. 303)

Despite an increasing volume of studies of A-life and AI, there is little consensus on definitions of “artificial,” and “life” (for reviews see, Magnenat-Thalmann & Thalmann, 1994; Langton, 1995; Pattee, 1996; Collins & Kusch, 1998; Dewdney, 1998; Menzel & D’Aluisio 2000; Gomi 2001). The phrase “A-life” was coined by Langton (1995) and literally means “life made by humans rather than by nature,” whether bionic, material or virtual (p. ix). Explaining A-life roots in artificial intelligence, Steels (1995) suggests that the

AI community has started to stress embodied intelligence and made a strong alliance with biology and research on artificial life. This is opening up an “artificial life route to artificial intelligence” which has been characterized as bottom up AI, the Animat approach, or behavior based AI or animal robotics. (p. 75)

Influenced by biology and complexity theory, most descriptions of A-life emphasize the importance of “autonomy” in living systems (Boden, 1996a; Boden,

1996b). In this context, an autonomous agent means any self-organizing “adaptive system which actively behaves to achieve a certain goal while in continuous long term interaction with its environment” (Wheeler, 1996, p. 210).

After criticizing promises of AI research, which are reminiscent of old modernist, rationalist, humanistic and romantic visions in the boundaries of human nature and machine, Sack (1997) presents A-life as an example of the “aesthetic critique of AI” (p. 63). The “aesthetic turn” from essentialist objections toward a neo-cybernetic examination of the roles of the body, the senses and perception and interactions with environment, however, produces ethical implications, if we are all interconnected with all that is “enough similar to us” (Sack, 1997).

By problematizing *how* the effects of machines-as-agent are being generated, Suchman (2000, 2002, 2004) advises us to attend to historical materialization of machines and its consequences. Haraway’s cyborg helps us understand distinctions between natural and artificial in more meaningful ways. A cyborg is a “cybernetic organism, a hybrid of machines and organism, a creature of social reality as well as a creation of fiction” (Haraway, 1985, 1990, p.149). Cyborgs blur the binary between human and machine, science and social reality, natural and artificial and male and female, and define technology as “a social discourse rather than as a strategy or artifact” (Standish, 1999, p. 425). Haraway (2004) reminds us that the “trope of nature through a *relentless artifactualism* means that nature for us is made as both fiction and fact” (p. 65). In this sense, with ethnographic research at the Santa Fe Institution, Helmreich (1998) contends that our culturally specific vision of *life-as-we know-it* is now re-encoded by a construction of *life as-it-could-be*— Haraway’s (1985, 1991) discourse on the erosion of boundaries between culture and nature redefines life as “a kind of relationship, an achievement among many actors, not all of them human, not all of them organic, not all of them technological” (p. 297).

Similarly, Inayatullah (2001) notes that nature is not an “uncontested category, rather humans create nature based on their own scientific, political and cultural dispositions” as other. Thus, “ideological justifications from Christianity and the classical Cartesian separation in Western thought between mind/body, self/environment and self/nature leads to the denial of rights for nature” (McNally & Inayatullah, 1988. Body section, para 32). With this transformation in epistemology, Inayatullah (2001) notes that:

Humans may see robots in their own rights; not only as mechanical slaves, products to buy and sell, but also entities in their own rights. Denial of rights of robots— since they are considered other, as not sentient, and thus not part of our consideration— becomes an exemplar of how we treat other humans, plants, animals and civilizations.... Robots should have rights not because they are like humans, but because of what they are, as themselves (Body section, para. 48).

According to Twist (2003), this is not a matter of whether a machine has the ability to exhibit behavior that is intelligent or emotional. From Turing to Kurzweil, the AI movement has consistently made this argument. Furthermore, comparing artificial agents to animals, Elton (1997, 2000) argues there are no differences that

make a moral difference between real animals and some animated agents featured in video games (i.e., the “viewpoint of vegetarians”).

If and when robots have their own rights, what are their responsibilities? Are they to be merely contained by Asimov's Laws? To accommodate rights associated with relationships between nature and machines, we need to reassess our language. According to Inayatullah (2001), rights are less an asset for the oppressed than a stock of symbols for the state to use against others—rights are used in a zero-sum competitive world of the majoritarian ruling over the minoritarian. Hence, Waldron (2000) suggests that the language of rights be replaced with the language of “needs.” Liberties typically refer to negative rights (i.e., protection from limits on communication and speech, invasion of privacy) and human rights commonly refer to positive rights (i.e, rights to education, health care, work). A language of needs, however, is no less contestable and has a less secure relation to the idea of social duty (Petrina, Volk & Kim, 2004; Waldron, 2000).

A-LIFE AND THE SIMS

As Will Wright, creator of *The Sims* noted, "Sim characters are "like human guinea pigs. It makes you realize how much of your own life is a strategy game" (Hamilton, 2000). A key rule for the game is the way in which players control the lives of characters they create. It is a so called ‘people simulator’ and one of the ‘God games’ in the players' genres (Frasca, 2001a; Kline, Dyer-Witthof, et al., 2003; Nutt & Railton, 2003). With sophisticated three-dimensional graphical images, *The Sims* invites players into a set of suburban neighborhoods, which model ordinary everyday “real life situations” (Frasca, 2001a; Frasca, 2001b; Consalvo, 2003; Kline, Dyer-Witthof, et al., 2003; Nutt & Railton, 2003). By creating their own characters, players take up certain subjectivities and exercise certain options that animate *The Sims* with stories from everyday contexts. As Jenkins (2001) mentions, *The Sims* leads players to examine their own lives by simplifying a complex real world into a microworld. This simulation game is an intriguing realization of A-life. In this suburban-family simulation game, not only do players need to manage their daily lives by feeding them but also to design and furnish their home.

However, these creatures appear to be somewhat autonomous in meeting their needs (e.g., Bladder, Hygiene, Comfort, Hunger, Energy, Fun, Social and Room) to a degree when players don't want to play *The Sims*. They simulate “autonomy” by demonstrating diverse behaviors for survival in their environment. God-like power over the simulated life seems to provide a sense of “outside” control while being “inside” and controlled by larger and more powerful forces (Suchman, 2000, p. 6).

Maxis [*The Sims* software producer] provides the user with a fascinating virtual “nature,” with its own physics and environment, replete with occupants that “live” their virtual lives within the confines of these artificial realities. The role of the user in these games is not so much participant in the action, as is the case with most computer games, but rather as the reigning

“God” who designs the universe from the bottom up.... In [*The Sims*], Maxis has essentially created a flight simulator that gives one a taste of what it would be like to be in the pilot’s seat occupied by God. In fact, if God used a computer simulation to create the world and populate it with organisms, his [her, its] software tools would look a lot like those found in [*The Sims*]. (Quoted in Helmreich, 1998, p. 86)

Game characters become a mechanism for realizing a player's will in the game. Sims characters are more than artifacts for the players: They are players themselves. Such emotional experiences are consistent with Wright’s original intention for the game:

If you’re building a solution, how large that solution space is gives the player a much stronger feeling of empathy. If they know that what they’ve done is unique to them, they tend to care for it a lot more. I think that’s the direction I tend to come from (Extracted from a conversation with Will Wright by Celia Pearce, 2001).

Not only does *The Sims* provide players with tools, called the “Sim Creator,” but characters in the game even express love, contentment, anger, disappointment, deceit, and despondence through “comic-like bubbles” so that players can see emotions in how the character acts. The character's thinking is influenced by well-defined emotional states (Figure 2).





Figure 2. Characters in the game express emotions like love, anger, and the like. Comic like bubbles show players what characters need or think.

In particular, artificial intelligence becomes more sophisticated in *The Sims 2* to draw real emotions from players (Freeman & Wright, 2003). For instance, characters grow old and die but they also have memories that affect their personality and relationships with other family members or friends, due to a new “aspiration/fear system” (Sjoberg, 2004).

Killing Sims

The Sims evokes quite intense emotional experiences, characterized by strong feelings of caring, empathy, engagement and attachment to their characters or families, and what they feel as their character grows through the process of nurturing. One member of online discussion forum wrote:

I have no idea, and I don't know why it's so fun. When I think about it, it's really stupid. I don't want to spend all my time playing Sims. But then your guy needs to shower, and he starts to get grumpy. He's stomping his feet. So what are you going to do?

Players understand their character's situation, however, they do not relate to the character in any uniform way. After investigating people's relationships with AIBO, a robotic pet, Friedman, et al. (2003) concluded that “participants seldom attributed moral standing to AIBO (e.g. that AIBO deserves respect, has rights not to be harmed or abused, or can be held morally accountable for action), despite their attachment” (p. 273). In fact, in hundreds of Fan Web sites devoted to the game, players playfully describe the wicked ways they have killed their Sims, such as putting them in a tiny room with no bed and no washroom, setting them on fire, not letting them sleep until they pass out, or putting them in a pool, then deleting all the ladders and waiting to see how long it takes to drown (Figure 3).



Figure 3. Gaming strategies to torture and kill characters.

In the most spontaneous postings to *The Sims* discussion forums, players note that nefarious behaviors like killing their character is just a part of videogames, or “great stress relievers.”

Sim killing is *fun*. Maybe you hate Britney, and you make a Sim like Britney *just* so you can kill her. Fun. Anyway, because I am a Sim serial killer, I don't just kill my Sims one way. That would be so boring! So I've made a list of original ways you can kill Sims. If you have any more ways, e-mail me and tell me so I can add them :) (Anonymous, 2004, April 13)

In particular, one of the players remarked that “Maxis made allowances for death and tragedy! If the game was meant to be played ONLY so that we kept all our Sims perfect and happy, then no one would get to see all the interesting (and often funny) things that happen when tragedy strikes” (Emeria, 2004, October 24). One member comments that having a “ghost” is the entire reason he kills his character.

Interestingly, with the recently released *The Sims 2*, players in the same discussion topic under the thread of “killing *The Sims*” responded somewhat differently. Due to the new features including reproduction, genetics and aging in *The Sims 2*, more often than not, most of postings in the thread “Please, don't kill them all” recognized the moral dilemmas created in *The Sims 2*:

I don't think you should kill all of them, unless you really want to do that.
You have to think about the consequences....Second: The remaining sim will

have that memory as a bad one. Will cry and you will end up with a ghost.
Third: Poor Sim!!!!

Now, if you don't want the poor guy, make him move. If it don't create bad memories, you can use that Sim later, and you will not have any ghost scaring your beloved Sim. (David, 2004, October 25)

Awwwww, I don't know how anyone can kill their Sims. They seem so real too me. (Rara, 2004, October 25)

I kill sims for the bad memories and aspiration plunge. Teen stage lasts too long, and I'm always anxious for them to become adults... having them as family sims and waiting for the death of a family member fear to come up makes it a lot easier to age them via the elixir. (Anonymous, 2004, October 25)

Most of *The Sims 2* players face moral dilemmas about killing their characters, and feelings *that* Sims are “real,” are evoked. One member wrote:

I love killing my Sims and do it all the time. I revel in it. And it is even better now with Sims 2 because of how realistic it is. Let me explain. Have you ever had a really bad bad bad BAD day and it is the fault of a certain person that you can NOT get even with because the effects of that would be too disastrous in real life? That is where the Sims comes in. Create a Sim that looks like that person or persons, move her/him/them into a house and then plot their demise. It's really therapeutic and prevents me from going mental on the real life person. I find starvation to be the most entertaining and the most satisfying results. But sometimes a barbecue brings the same results. (Dunn, 2004, October 25)

But at the same time, a player noted that the consequences of killing a Sim weighs on one's conscience:

I don't kill Sims that represents my family members and closest friends. No matter how much they make my life crazy or how much they annoy me. I couldn't do that. Especially not with Sims 2. That would just be wrong. (Dunn, 2004, October 25)

As illustrated above, since *The Sims* characters evoke conceptions of life-like essences, and are conceived to have moral standing in the way that they represent “my family members and closest friends” or are recipients of care. Even with little attachment, players can be held morally responsible.

Conclusion

In this article, we examined critical issues in A-life rights, an emergent but, as yet, little understood area of educational inquiry, through the videogame, *The Sims*. This game epitomizes a “new cyborgian relationship” with machines,” mediating

cultural texts and offering new subjectivities (Lahti, 2003). Exploiting the relative comfort in distance that virtual life affords, researchers have explored the use of digital simulations to prompt students to reason through a range of moral dilemmas (e.g., Bers, 2001; Wegerif, in press). As in a case where an individual's consciousness is modified by merging with a machine, *The Sims* represents powerful ethical dilemmas. "Familiar to us" cannot be a guiding criterion for moral concern and A-Life urges us to rethink profound assumptions about relationships between human and machines. It does not mean we attempt to build "a taboo system that gets further and further from the actual value" (McDonald, 2004, para.12), but we need to redress our very notion of rights and what they mean if "boundaries between humans and machines are not naturally given but [artificially] constructed" (Suchman, 2000, p. 8). By questioning "uncontested" boundaries between humans and machines, we not only reconceptualize our relationship with machines but we also increase the potential for players to face moral questions that social simulations and gaming generate.

REFERENCES/BIBLIOGRAPHY

- Boden, M. A. (1996a). Autonomy and artificiality. In M. A. Boden (Ed.), *The philosophy of artificial life* (pp. 95-108). Oxford: Oxford University Press.
- Boden, M. A. (1996b). Introduction. In M. A. Boden (Ed.), *The philosophy of artificial life* (pp. 1-35). Oxford: Oxford University Press.
- Breazeal, C. L. (2002). *Designing sociable robots*. Cambridge, Mass.: MIT Press.
- Collins, H. M., & Kusch, M. (1998). *The shape of actions: What humans and machines can do*. Cambridge, Mass.: MIT Press.
- Consalvo, M. (2003). Hot dates and fairy tale romances: Studying sexuality in video games. In M. J. P. Wolf & B. Perron (Eds.), *The video game theory reader* (pp. 172-191). London: Routledge.
- Cross, N. (2001). Can a machine design? *Design Issues*, 17(4), 44-50.
- Dewdney, C. (1998). *Last flesh: Life in the transhuman era* (1st ed.). Toronto: HarperCollins.
- Dorin, A. (2004). Building artificial life for play. *Artificial Life*, 10(1), 99-112.
- Elton, M. (1997). Robots and rights: The ethical demands of artificial agents. *Ends and Means*, 1(2), Retrieved, October 7, 2004, from <http://www.abdn.ac.uk/philosophy/endsandmeans/vol2001no2002/elton.shtml>.
- Elton, M. (Spring 2000). Should vegetarians play video games? *Philosophical Papers*, Retrieved, November 25, 2004, from <http://www.philosophy.stir.ac.uk/cnw/webpapers/matthew2003.htm>.
- Frasca, G. (2000). Ephemeral games: Is it barbaric to design videogames after Auschwitz? In M. Eskelinen & R. Koskimaa (Eds.), *CyberText Yearbook 2000*. Finland: Jyvaskyla: University of Jyvaskyla.
- Frasca, G. (2001a). Rethinking agency and immersion: Video game as a means of consciousness-raising. *Digital Creativity*, 12(3), 167-174.
- Frasca, G. (2001b). The Sims: Grandmothers are cooler than trolls. *The International Journal of Computer Game Research*, 1(1). Retrieved, February 13, 2004, from <http://www.gamestudies.org/0101/frasca/>
- Freeman, D., & Wright, W. (2003). *Creating emotion in games: The craft and art of emotioneering*. New Riders.
- Hamilton, A. (2000, February 7). Hangin' with the Sims. *Time Canada*, 155, Retrieved from <http://www.time.com/time/archive/preview/0,10987,996008,996000.html>.
- Haraway, D. (1985). A manifesto for cyborgs. *Socialist Review*, 15(2), 65-107.
- Haraway, D. (1990). A manifesto for cyborgs: Science, technology, and socialist feminism in the 1980s. In L. J. Nicholson (Ed.), *Feminism/postmodernism* (pp. ix, 348). New York: Routledge.

- Haraway, D. (2004). The promises of monsters: A regenerative politics for inappropriate/d others. In *The Haraway reader* (pp. 63-124). London: Routledge.
- Harnad, S. (2003). Can a machine be conscious? How? *Journal of Consciousness Studies*, 10(4-5), 67-75.
- Helmreich, S. (1998). *Silicon second nature: Culturing artificial life in a digital world*. Berkeley: University of California Press.
- Helmreich, S. (2001). Artificial life. Inc.: Darwin and commodity fetishism from Santa Fe to silicon valley. *Science as Culture*, 10(4), 483-504.
- Inayatullah, S. (2001). *The rights of your robots: Exclusion and inclusion in history and future*. Retrieved November 12, 2004, from <http://www.kurzweilai.net/articles/art0266.html?printable=1>
- Kahn, P. H. J., Friedman, B., & Hagman, J. (2002, April 20-25). "I care about him as a pal": Concepts of robotics pets in online AIBO discussion forums. Paper presented at the CHI 2002: Changing the world, changing ourselves, Minneapolis, U.S.A.
- Kerr, I. R. (2004). Bots, babes and the californication of commerce. *University of Ottawa Law & Technology Journal*, 285-324. Retrieved, November 225, from [http://web285.uottawa.ca/techlaw/resc/UOLTJ_281.281&282.doc%2013\(Kerr\).pdf](http://web285.uottawa.ca/techlaw/resc/UOLTJ_281.281&282.doc%2013(Kerr).pdf).
- Kline, S., Dyer-Witheyford, N., & De Peuter, G. (2003). Sim capital. In S. Kline, N. Dyer-Witheyford & G. De Peuter (Eds.), *Digital play: The interaction of technology, culture, and marketing* (pp. 269-293): McGill-Queen's University Press.
- Kozima, H., Nakagawa, C., & Yano, H. (2004). Can a robot empathize with people? *Artificial Life Robotics*, 8, 83-88.
- Langton, C. G. (1995). *Artificial life: An overview*. Cambridge, MA: MIT Press.
- Magenat-Thalman, N., & Thalman, D. (1994). *Artificial life and virtual reality*. Chichester, West Sussex, England: New York: Wiley.
- McNally, P., & Inayatullah, S. (1988). The rights of robots: Technology, culture and law in the 21st century. *Futures*, 20(2), 119-136.
- Menzel, P., & D'Aluisio, F. (2000). *Robo sapiens: Evolution of a new species*. Cambridge, MA: MIT Press.
- Michaud, F., Prijanian, P., Audet, J., & L'etourneau, D. (2000). *Artificial emotion and social robotics*. Paper presented at the Fifth International Symposium on Distributed Autonomous Robotic Systems (DARS).
- Miller-Daly, L. (2003). *A history of rights in online worlds*. Retrieved October 7, 2004, from <http://graphicssoft.about.com/>
- Murray, A. T. (2001). A cyborg bill of rights. *Robo Wife*, Retrieved, September 28, 2004, from <http://mentifex.virtualentity.com/robowife.html>.
- Nofz, M. P., & Vendy, P. (2002). When computers say it with feeling: Communication and synthetic emotions in Kubrick's 2001: A space odyssey. *Journal of Communication Inquiry*, 26(1), 26-45.
- Nutt, D., & Railton, D. (2003). The Sims: Real life as genre. *Information, Communication & Society*, 6(4), 577-592.
- Pearce, C. (2001). Sims, bottlebots, cellular automata God and go, *Game Studies*. Retrieved July 12, 2004, from <http://www.gamestudies.org/0102/pearce/>
- Pattee, H. H. (1996). Simulation, realization and theory of life. In M. A. Boden (Ed.), *The philosophy of artificial life* (pp. 379-393). Oxford: Oxford University Press.
- Petrina, S., Volk, K. & Kim, S. (2004). Technology and rights. *International Journal of Technology and Design Education*, 14(3), 181-204.
- Rodney, B. (2000). Will robots rise up and demand their right? *Time*, 155.
- Sack, W. (1997). Artificial human nature. *Design Issues*, 13(2), 55-64.
- Sengers, P. (2000). Narrative intelligence. In K. Dautenhahn (Ed.), *Human cognition and social agent technology: Advances in consciousness research*. v. 19 (pp. 1-26). Philadelphia: John Benjamins.
- Sjoberg, L. (2004). Sims 2: Face lift of the original. *Wired News*, Retrieved November 21, 2004, <http://www.wired.com/news/games/2000.2101.65038.65000.html>.

KIM & PETRINA

- Squire, K., & Jenkins, H. (2002). *The art of contested space*. Retrieved March, 2004, from <http://web.mit.edu/21fms/www/faculty/henry3/contestedspaces.html>
- Standish, P. (1999). Only connect: computer literacy from Heidegger to cyberfeminism. *Educational Theory*, Vol. 49 (4). 417-435.
- Steels, L. (1995). The artificial life roots of artificial intelligence. In C. G. Langton (Ed.), *Artificial life: an overview* (pp. 75-110). Cambridge: MIT Press.
- Suchman, L. (2000). *Human/machine reconsidered*. Retrieved October 3, 2004, from <http://www.comp.lancs.ac.uk/sociology/papers/Suchman-Human-Machine-Reconsidered.pdf>
- Suchman, L. (2002, August 2). Replicants and irreductions: Affective encounters at the interface. European Association the Study of Science and Technology (EASST). Retrieved November 14, 2004, from <http://www.comp.lancs.ac.uk/sociology/papers/suchman-replicants-and-irreductions.pdf>
- Suchman, L. (2004). *Figuring personhood in sciences of the artificial*. Retrieved December 2, 2004, from <http://www.comp.lancs.ac.uk/sociology/papers/suchman-figuring-personhood.pdf>
- Waldron, R. (2000). The role of rights in practical reasoning: "Rights" versus "needs". *The Journal of Ethics*, 4, 115-135.
- Wheeler, M. (1996). From robots to Rothko: The bringing forth of worlds. In M. A. Boden (Ed.), *The philosophy of artificial life* (pp. 209-236). New York: Oxford University Press.

AFFILIATIONS

*Juyun Kim, Ph.D. Candidate
Department of Curriculum Studies,
University of British Columbia*

*Stephen Petrina, Associate Professor
Department of Curriculum Studies,
University of British Columbia*