# Future Challenges of Robotics and Artificial Intelligence in Nursing: What Can We Learn from Monsters in Popular Culture?

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## ABSTRACT

It is highly likely that artificial intelligence (AI) will be implemented in nursing robotics in various forms, both in medical and surgical robotic instruments, but also as different types of droids and humanoids, physical reinforcements, and also animal/pet robots. Exploring and discussing AI and robotics in nursing and health care before these tools become commonplace is of great importance. We propose that monsters in popular culture might be studied with the hope of learning about situations and relationships that generate empathic capacities in their monstrous existences. The aim of the article is to introduce the theoretical framework and assumptions behind this idea. Both robots and monsters are posthuman creations. The knowledge we present here gives ideas about how nursing science can address the postmodern, technologic, and global world to come. Monsters therefore serve as an entrance to explore technologic innovations such as AI. Analyzing when and why monsters step out of character can provide important insights into the conceptualization of caring and nursing as a science, which is important for discussing these empathic protocols, as well as more general insight into human knowledge. The relationship between caring, monsters, robotics, and AI is not as farfetched as it might seem at first glance.

## INTRODUCTION

It is highly likely that artificial intelligence (AI) will be implemented in medical technologic equipment for clinical monitoring and decision making.[1,2] This change will probably happen rapidly and on a global scale, because digitalization and globalization are intensely connected via the Internet.[3,4] For this reason, the ethics of robotics and AI must be well developed for these posthuman creations to make decisions within the frame of acceptable human ethics and values of nursing.[5] One paradox is the question of how we can understand and explore these AIs before we must embrace them as facts in everyday health care services.[6-9]

Monsters in popular culture could be scrutinized with the hope of learning about situations that generate empathic capacities.[10] If everyone who encounters a fictional monster—in a book, play, motion picture, or video game—and who engages in caring activities reported their observations, together these observations might show important patterns relating to empathic abilities in posthuman creations. Cataloging and analyzing situations in which monster characters actually become nurturing and caring can be important for understanding how humans care as well as for understanding care in relation to posthuman venues. Are these situations of protection, sheltering, or friendship? Questions about empathy in relation to robotics and AI have been addressed by researchers. Usually, this relationship is presented from the perspective of humans' empathy for robots.[11,12] However, the dimension we are interested in is the reverse: the empathic capacities that robotics and AI can demonstrate for humans. The knowledge generated will bring clues as to what the relationship is between empathy and AI and will contribute to our understanding so that it will be useful for a future where the impact of digitalization has to be taken into account in nursing/caring theories. This is one attempt to capture understanding about empathic intelligences in virtual creations, that is, robots, machines, and cyborgs (empathic protocols). From this perspective, we ask the question of whether monsters can help us relate to AI and to nursing robots.

## LINK BETWEEN MONSTERS AND ARTIFICIAL INTELLIGENCE

Monsters do relate to robotics and sometimes to "evil" machines that combine the two into one appearance. One example in popular culture is found in the *Terminator* film series, in which machines have reached far beyond the point that is often referred to as technologic *singularity*.[13,14] Technologic singularity is a critical moment, a point when AI surpasses biological intelligence. In the *Terminator* series, the machines develop, improve, and reproduce themselves without human involvement, and their goal is to drive their creators—the humans—to extinction.

However, in the 1940s, Isaac Asimov[15] wrote *Runaround,* in which he developed the Laws of Robotics:

1. A robot may not injure a human being, or through inaction, allow a human being to come to harm
2. A robot must obey the orders given it by human beings, except where such orders would conflict with the First Law
3. A robot must protect its own existence as long as such protection does not conflict with the First or Second Law [15p44-5]
4. (Added later, known as the zeroth law): No robot may harm humanity or, through inaction, allow humanity to come to harm.[16]

We are entering an era when the vast digitalization of health care in everyday life and the fictional Laws of Robotics just presented are discussed as reality.[17] Health care institutions and the nursing discipline face paradigmatic changes that are related to digital technology. For the discipline of

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nursing, the relationship to technology and AI is sparse, so these changes will represent a giant leap. We argue that it is also highly relevant and timely for nursing science to monitor and to debate AI and Robotics in the same fashion as other areas, such as medicine.

The International Robot Fair[16] concluded with a World Robot Declaration proposition that next-generation robots will 1) be partners that coexist with human beings, 2) assist human beings both physically and psychologically, and 3) contribute to the realization of a safe and peaceful society. Even though robots equipped with AI in popular culture often are portrayed as embodied monsters, this might not be the reality in the near future. However, and more importantly, AI is developing rapidly, and several research projects predict that technologic singularity is no more than 30 years away.[18] Today's robots are starting to be implemented in health care facilities, in forms such as surgical robots[19] and in nursing homes.[20] As posited in the World Robot Declaration, next-generation robots assist humans physically. One important aspect of AI and robotics for nursing is that nurses might be firsthand partners, working in nursing in institutions with robots in the near future. Nurses might interact with household robots in patients' homes rather than with the patients themselves.

## CHALLENGES OF ROBOTICS AND ARTIFICIAL INTELLIGENCE IN NURSING

Even if there is a connection between monsters and robots, one does not ordinarily think of monsters and nursing in the same framework, nor of robotics and empathy. The relationship between caring monsters, robotics, and AI is not as farfetched as it might seem at first glance. Both robots and monsters are posthuman creations.[21] Just like the robot, monsters are also connected to cultural and historic contexts.[22] Monsters represent our fears, and they stand on the threshold of human becoming, always representing "the other."[23-25] These representations suggest that monsters ask us how we perceive the world; they ask us to reevaluate our cultural assumptions about ethnicity, gender and sexuality, our perception of difference, and our tolerance toward

expression.[26] More generally, monsters ask us why we created them.[26] Maybe for that reason, popular culture is full of monsters in TV series, books, and movies.

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These representations in popular culture have the potential to contribute to scholarly knowledge in relation to the challenges we are facing in nursing because of digitalization. Autonomous personal robots for private use are entering the general market in 2016.[27] Autonomous personal robots will have the capability to recognize faces, take part in conversations, adapt to new environments, and make their own decisions on the basis of their own AI. AI has taken a giant leap compared with mobile personal assistants such as Siri (Apple, Cupertino, CA) and Assistant (Speaktoit Inc, Palo Alto, CA) or similar tools. Although the robot may seem impressive and appears to create safety, the robot is not in itself particularly intelligent, which is why we must distinguish between the robot as a technical tool and its ability to make its own decisions.[28,29] Exploring and elaborating on robots and AI is highly relevant and timely for nursing research.

## IMPLICATIONS FOR NURSING PRACTICE

When various nursing robots become common practice in institutional settings, they will have a major impact on nursing work, the nursing profession, and health care in general.[30,31] Nursing robots will redefine ideas about nurses in general as well as ideas about nursing attributes and conceptual frameworks of comfort and safety in particular.[32,33] Staying abreast of developments regarding redefinitions of nursing and its underlying beliefs, values, and assumptions is relevant to also understanding the implications of AI and robots in health care. We therefore state that we can turn to monsters and their evolutionary existence for preparing

ourselves and improving our understanding of AI and robotics.

What we can see in our project Caring Monsters[34] so far is that monsters are not doomed to uphold their monstrous characters. They reshape their existence and meaning over time. A monster as "the other" is not a fixed position, nor is the position unchangeable in relation to humans. For example, our fear of the power of science, as represented by Frankenstein's monster, has shifted over nearly 200 years from being the epitome of all monsters to the superhero.[35] Our fear of technology and AI as represented in the *Terminator* film-series shows an evolution from killing machine to conscientious protector.[13] Fear of the collapse of a given society, as represented by zombies in current popular culture, has shifted in just a few decades from being the problem to representing the solution for humanity, as represented in the book and film "Warm Bodies" and the British TV series "In the Flesh."[36] The ability to doubt is visualized and highlighted as crucial when monsters step out of character in popular culture. The ability to doubt seems to be a cornerstone when giving caring attributes to the monsters. We therefore assume that monsters do not exist as separate entities in nature; rather, they are socially constructed in, for example, colloquial speech in everyday conversations and manifested throughout popular culture, where they are narrated in texts or depicted in movies.

In the future of nursing robotics, questions of empathic protocols should be explored further. Analyzing when and interpreting why monsters step out of character can provide important insight into the conceptualization of caring and nursing as a science, insight that is important for discussing these empathic protocols and, more generally, human knowledge.[20]

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It is important to address the issue that monsters are creations of storytellers and writers who have their own ideas and messages about AI and robotics. However, the storytellers' motivations are not necessarily the same as the readers' and viewers' ideas, nor the larger social interpretations that the monster itself creates. In other words, the writers' and creators' motivations do not always match with the ideas their work provokes. We can apply this logic in the context of AI; the motivation behind researchers creating AI might not be the same as the interpretation of the resulting AI itself. Monsters exist outside and beyond storytellers' and writers' motivations. For this reason, we have chosen to look at the monsters themselves, not the creators' motivations and intentions. By stating this, we recognize the understanding of reality as the projection of an ongoing construction and reconstruction from the points of reference that we experience through life and that doubt and self-negotiation are vital human values that also seem to be crucial in the evolutionary history of monsters. ❖

### Disclosure Statement
*The author(s) have no conflicts of interest to disclose.*

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