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Why Telepresence Matters: A Personal Answer to the "So What?" Question

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Abstract

This essay describes some of the author's reasons for his long interest in studying telepresence. A key goal is to encourage a wider discussion of the importance of the topic.

1. Introduction

Scholars who study telepresence (and pretty much any topic) are familiar with the need to justify the importance of their work by answering the "So what?" question: "Ok, you want to know what causes presence or what it causes – Why does it matter? Who cares (or should)? What difference does it make?"

Thanks to Cisco and other companies that have recently developed high-end video meeting technologies and services to replace expensive, physically and emotionally draining travel and cut down on carbon emissions that harm the environment, there are some easy practical answers to the question. And teleoperation has clearly valuable applications in science, medicine and elsewhere.

But what about those of us who define and study telepresence in broad context, as a diverse set of phenomena in which technology users overlook or misconstrue the role of the technology?

Friends and colleagues have accused me of seeing presence in 'everything' – not just technologies like virtual and augmented reality and high-end video conferencing but robots and androids we treat as human, pseudo-interactions with television personalities, perspective painting, and even snowmen. If presence is 'everything,' is it really closer to 'nothing'? Does the concept really matter? And if so, why?

Having been interested in and having studied it for many years, I've often thought about why I personally find the concept and phenomena of telepresence to be so compelling and how I can best answer the "so what?" question. So in this essay I examine some of my explanations with the hope that it will prompt others to think about and refine their own and make our case more effectively to the wider academic and professional communities.

2. Definitions

A great frustration to many of us who study telepresence concerns the lack of agreement on what the term means, or even what term we should use for what we're studying. We often say and write 'presence' instead of 'telepresence,' but the word presence has many meanings related and unrelated to the phenomena we're interested in (and it makes effective literature searches nearly impossible).

In a long in-press book chapter [1], a colleague and I examine the many definitions in diverse literatures. Other than the distinction between definitions that involve technological mediation and those that don't (e.g., "stage presence"), the key distinction is between definitions of objective physical reality – whether someone is or is not present, or the characteristics of particular technologies (Cisco et al.'s TelePresence product lines) – and definitions of subjective experiences in which a person in some way overlooks or misconstrues the role of technology.

To a small but growing segment of the public, telepresence refers to a visual collaboration technology that replicates important aspects of face-to-face business meetings. To HPL, the leading telepresence consulting service, telepresence is "the science and art of creating visual collaboration environments, networks, and strategies that duplicate in-person meeting experiences as completely as possible in both internal and external business communications" [2]. But to the academic community, telepresence is defined in a much broader manner that, despite many variations, is almost always at least consistent with the explication by the International Society for Presence Research [3]:

> *[A] psychological state or subjective perception in which even though part or all of an individual's current experience is generated by and/or filtered through human-made technology, part or all of the*

> *individual's perception fails to accurately acknowledge the role of the technology in the experience. Except in the most extreme cases, the individual can indicate correctly that s/he is using the technology, but at *some level* and to *some degree*, her/his perceptions overlook that knowledge and objects, events, entities, and environments are perceived as if the technology was not involved in the experience.*

To me, telepresence is not a technology but an experience evoked by a technology, and it's by no means limited to the real-human-to-real-human business (or even personal) meeting context. The broad definition also includes the sense of 'being there,' either alone or with real or fictional people, in virtual reality, video games, and online virtual worlds like Second Life; in IMAX and IMAX 3D theaters; while watching high definition television screens; and even when reading compelling books. It includes the sense of parasocial interaction evoked by television personalities, known by their first names, who we come to regard as friends. It includes the perceptual 'mistakes' of optical illusions and our responses to perspective cues in trompe l'oeil ('deceive the eye') paintings and murals that, once we perceive the illusion, remind us that our physiology filters experience. And telepresence includes our strange, intuitive sense that robots, androids, toys, virtual pets, and even computers and cars, are in some way living social beings with their own personalities. It even includes the odd and less common sensation during both horrible and wonderful non-mediated experiences that technology *does* play a role ("I feel like I'm in a movie") when it doesn't.

3. Why I Care

Academics are generally fortunate enough to choose the topics they study. As a wise mentor in graduate school, Steven Chaffee, argued, we may need to be objective in conducting our research, but we should let our passions and interests guide our choices of *what* to study. So why do I care about telepresence? Looking back, I see that I was always interested in telepresence phenomena, even when I didn't know the term. As a child I watched favourite television programs on what would now be considered a small (19") black-and-white Zenith television set, the kind with actual dials and no remote. I often tried to watch those favorite programs alone so I could become completely absorbed in the fictional stories. I was drawn especially to science fiction (*The Twilight Zone*, *Star Trek*, *Prisoner*) that like later favoured films (*Blade Runner*, *The Matrix*, *13th Floor*, *The Truman Show*, *Inception*) showed compelling characters discovering in dramatic ways that what they had considered reality wasn't what it had seemed, of technology altering people's experiences in surprising ways. I also spent time listening to 'disc jockeys' on Los Angeles radio stations introduce songs and talk about what was happening, in 'real time,' in the city and elsewhere. Before I was old enough to watch late night television personalities like Johnny Carson and his successors, and long before I heard of parasocial interaction and relationships, I experienced them with these 'friends' I'd never met.

I've long thought it fascinating that watching not only a high quality, well acted and scripted, realistic and subtle drama but even a more common, generically acted and scripted, unrealistic and obvious drama, could at times make me feel the deep emotions of the characters as if they were real. And that I didn't even need to see and hear the characters to have that experience: I still vividly remember barely being able to read the last pages of the high school-assigned Leo Tolstoy novel The Death of Ivan Ilyich to my mother without tearing up.

Over what in the larger context is just the blip of time that has passed since I was a child, nearly every kind of mediated experience has become not only more convenient but more rich, vivid, and better able to stand in for nonmediated experience. The small black-and-white TV set has been replaced by a large plasma HD monitor and Dolby surround sound audio system. Movie theaters feature bigger, clearer, 3 dimensional images and sound; and CGI and motion capture allow film and other media makers to reproduce anything writers can imagine. Scratchy, skipping records and hiss-y cassette tapes have been replaced with pristine digital CDs and mp3s. Computers with GUIs and video game consoles that play Blu-ray DVDs have not only brought the interactivity of arcade games but customizable virtual worlds, and virtual people, into the home. And of course the speakerphone and jittery video conferencing are being replaced with vivid, dimensional, lagless telepresence meetings, both in custom rooms and on-the-go. As a person with congenitally limited vision (20/50 corrected), I may overestimate and be more sensitive to the potential of media to mimic the nonmediated, but these and emerging technologies such as augmented reality represent what to me is an endlessly interesting trend in which humans, at least in much of the world, are increasingly likely to confuse the mediated and nonmediated, the 'real' and the artificial.

4. Why We All Should Care

The implications of this trend in which we as a species have a greater ability to create, share and choose experiences that blur the lines between mediated and nonmediated range from just interesting to momentous, and nearly all of them provide good answers to the "so what?" question. In a recent book chapter [4] I reviewed many of the current and possible future applications of presence-related technologies along with some of their positive and negative implications. In many cases we actively seek the blurring of the lines. We love being able to "lose ourselves" in 3D IMAX theaters or HD home theatres or interactive social virtual worlds. As noted above, telepresence business meetings save money along with physical and emotional energy, help the environment, and they may even lead to not only quicker but better decisions; the same technologies promise to let us spend "quality time" with friends and family who are physically far away. At school and work we're increasingly learning by doing, even if the doing is in a sophisticated (and safe) simulation. We already have robotic and virtual pets to enrich our lives; we may soon have androids to take care of us when we're ailing. Our doctors are already using telepresence to learn and practice their craft and to communicate with each other and diagnose and treat – even perform surgery on – us over great distances. Advertisers are increasingly using simulation and personalization technologies to let us experience what it's like to have and use products before we decide to purchase them. Artists, musicians, actors and other creative folks are collaborating in intriguing new ways to not only work more efficiently but to produce new cultural forms such as choral performances by remotely distributed strangers. Scientists are exploring previously inaccessible parts of the earth and solar system remotely via telepresence, from undersea craft to Mars Rovers to NASA 'robonauts.'

At the same time, this new era of presence-evoking technologies raises new concerns about the effects of mediated violent and sexual content, media addiction, privacy and security, and even physiological effects such as eyestrain, headaches, simulator sickness, etc. (e.g., there are already concerns about 3D television [5]). Just as some worry that viewers learn inaccurate information from vivid and compelling TV docudramas, there will be concern about our learning inaccurate information from vivid simulations of various kinds. As virtual meetings come closer to seeming like nonmediated face-to-face interactions, and virtual people come closer to seeming like real ones, some people may adjust more quickly to the constellation of subtle cues that are and aren't transmitted, and have what some will call an unfair advantage in the interactions. And there are debates about the appropriateness of certain applications of the technologies, such as telepresent aerial bombing from across the world via unmanned airplanes (drones).

All of these implications of presence, and many more, clearly justify our studying the topic now and in the near-term. There are also three broad categories of implications of the presence trend that I believe will continue to make this a vital topic.

The first of these has to do with our lives as social beings. Telepresence that permits people to interact at a distance with other people or representations of them, and even with robots and androids, will promote closer human contact and ties, a greater sense of community and understanding, even greater intimacy. We'll be better able to overcome the many challenges posed by distance and time than at any time in human history. But ironically telepresence may also lead to social isolation. Already it's quite common to see people in parks, grocery stores, at concerts and other public events, even in classrooms, interacting with unseen others on cell and smart phones, PDAs, tablets and other devices; they're physically present in the location but mentally they're with others somewhere else. Utopian and dystopian predictions about future media effects are likely both too extreme, but as it gets easier and more natural and 'realistic' to communicate with others via technology, at least many of us seem likely to live more isolated, less richly social lives. Although they're both a long way off, two examples illustrate the dangers: Mechanical caregivers and companion pets and androids may help us meet the many challenges of caring for the aging population, but to the extent that they replace rather than supplement human-to-human contact, we will have misused the potential of telepresence. And while the long predicted use of technology to more accurately and completely reproduce sexual intimacy with actual or virtual people or androids [6] has the potential to improve relationships and lives, for example allowing relationships to flourish when the parties are separated, it also threatens them and raises significant moral challenges.

The second category of broad implications of the increase in telepresence concerns our ability to distinguish the natural from the created and manipulated. When we seek experiences such as in movies, video games, and theme parks, which present altered or created places, characters, and events, telepresence fulfills our need for distraction and delight. And as telepresence technologies evolve and converge, they'll provide ever more diverting,

entertaining and inspiring experiences – we'll be able to 'go' anywhere we want, whether it exists or not, and 'do' anything we want there, with tremendous potential not only for enjoyment but self discovery and actualization. In most of these cases, the technology user will of course know that the experience is created, designed and manipulated for their benefit (even though they probably won't know, and often won't want to know, the details of how this is done). In other cases though, the user will not be aware of technology's role in the experience. We already have digital image manipulation in advertising, autotuned pitch corrections in live and recorded music, and green-screened background billboards in sports broadcasts. "Reality" TV shows use script writers (and of course editors); fiction (e.g., *The Blair Witch Project* (1999) and *lonelygirl15* (2006)) is presented as if it was real; and there are "real Web pages for fake people, some of which were created by advertising and PR people who want to push a particular brand or agenda" [7].

As telepresence technologies advance, as augmented, mixed and virtual reality become more 'realistic,' we'll likely face more, and more difficult, challenges in distinguishing the 'real' from the 'manipulated.' It's one thing to watch a violent television program or film, or even play a violent animated first-person-shooter video game, but what happens when we can shoot and kill a perfect, vivid, realistic virtual version of our boss in our holodeck room after a frustrating day of work one day and then must return and report to him the next morning?

When we treat the artificial as authentic we become at least potential victims, but the reverse is problematic too. Lydia Timmins and I [8] observed that inverse presence, in which the non mediated is perceived as mediated, can lead to "disappointments and missed opportunities as reality that seems mediated turns out not to be as compelling and/or idealized as high presence mediated experiences" and the belief that "as in most mediated portrayals, the 'story' will all work out right in the end," leads to the failure to take actions to insure that they do.

The final and most far-reaching potential implications of the increasing role of telepresence are philosophical and involve the meaning of our lives. Imagine that the evolution of technology continues toward the perfect simulation. Consider the question posed by Robert Nozick's "experience machine" thought experiment [9]:

> *Suppose that there were an experience machine that would give you any experience you desired. Superduper neuropsychologists could stimulate your brain so that you would think and feel you were writing a great novel, or making a friend, or reading an interesting book. All the time, you would be floating in a tank, with electrodes attached to your brain. Should you plug into this machine for life, preprogramming your life's experiences? If you are worried about missing out on desirable experiences, we can suppose that business enterprises have researched thoroughly the lives of many others. You can pick and choose from their large library or smorgasbord of such experiences, selecting your life's experiences for, say, the next two years. After two years have passed, you will have ten minutes or ten hours out of the tank, to select the experiences of your next two years. Of course, while in the tank you won't know that you're there; you'll think it's all actually happening. ... Would you plug in? What else can matter to us, other than how our lives feel from the inside?*

Put practical issues including cost and access aside; assume you wouldn't just be living the experiences of others but creating your own (albeit virtual) ones. The choice to plug in still seems unappealing. While illusions can be incredibly compelling and valuable and allow us to do and discover many important things we otherwise could not, they seem positive only in small doses. We recognize something inherently and eerily wrong with choosing to live an (even ideal) illusion [10]. But that view isn't universal and could certainly change over time.

The illusion that is ideal in moderation but might be problematic beyond that doesn't have to be one we go to visit – it could be one that visits us: Melissa Selverian and I reviewed [11] the many ways humans have used technology to stay close to those who have died, from drawings and paintings, to audio and video recordings, to artificially intelligent online 'intellitars' [12] and androids [13]. While these efforts may help us cope with the longing we feel for those we've lost, the more elaborate and accurate reproductions also could interfere with the bereavement process. Again, even putting aside practical issues, there seems to be something eerily wrong about living the illusion of a life with our technologically reproduced ancestors.

As telepresence experiences are perfected, even our view of our place and role in the universe is changing. Just as the clock was a model for the universe centuries ago, the simulations that create telepresence illusions suggest a different possibility. The "Simulation Argument," that we will not have the choice of entering a life of illusion but are now already living in a computer simulation created by others, has sparked intriguing discussions in

philosophy, among the public and in popular culture [14, 15].

Conclusion

Most scholars care deeply about the object of their study and believe it important, and perhaps most scholars through history have thought they lived during important times of human discovery and change, but I can not imagine a concept or set of phenomena more personally and professionally compelling than telepresence, or a time to be alive as a scholar witnessing their evolution and in small ways shaping that evolution and our collective understanding of its causes, consequences and implications. When it comes to studying telepresence, I really can't imagine a shortage of good answers to the "so what?" question!

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