

# Preface

The *Handbook of Research on Technoself: Identity in a Technological Society* was inspired by innovative work carried out by scholars from diverse academic backgrounds who share a deep concern with the rapidly expanding world of technology and how it is challenging the public to redefine the boundaries of human nature, identity, and what it means to be human within an advancing technological society. Seminal work examining the interweavement of technology and human beings has been carried out under a variety of research programs over the last twenty years. This has provided a solid grounding for this emerging field along with a plethora of terms and jargon that describe the state of human identity within a technological society (I.e., cyborg, saturated self, transhuman, posthuman, android, humanoid, technohuman, digital/online identity, avatar, virtual life). This has contributed a multifaceted knowledge base to help unite and ground this body of emerging scholarship under the umbrella of Technoself Studies (TSS). Technoself Studies (TSS) contributes important and indispensable insights to help situate and explain technology's intertwinement with human identity and constructions of the self.

## ORGANIZATION

In terms of publication organization, the *Handbook of Research on Technoself: Identity in a Technological Society* is organized into four sections: Section 1 - Theoretical Groundwork for Technoself Research, Section 2 - Constructing Digital Identity, Section 3 - Social Media and Virtual Life, and Section 4 - Human Enhancement, Robotics, and Society. Section 1 introduces the reader to seminal technoself scholarship and related ideas. It provides an overview of various theoretical perspectives connected to work in Technoself Studies (TSS). Contributions from experts cover diverse theoretical, and historical perspectives grounding the emerging field of Technoself Research. Section 2 introduces technoself scholarship in one of its most popular domains, digital identity construction. This work delves into the role of the Internet in contributing to human identity construction and the challenges of reconciling online and offline identity. Section 3 focuses on social media applications and online community development and their role in redefining social identity within virtual environments. Section 4 explores key issues and trends in human enhancement technology, robotics, and other developments driving debates concerning changing conceptualizations of the human condition and what it means to be human within a technological society. It addresses major issues in human enhancement technologies while offering theoretical explanations and models to help guide future planning and regulation of a specific group of technologies which allow substantive changes to humans (physical, mental, emotional, genetic) and their identity. Taken together, the chapters in this handbook provide an invaluable set of tools to deal with a broad range of new possibilities arising from the growing intertwinement of technology and identity within our technological society.

In Section 1, chapter one entitled, “The Emerging Field of Technoself Studies (TSS)” (Rocci Luppicini, University of Ottawa) draws on a growing body of scholarly work focusing on the changing nature of human-technological relationships in order to glimpse the emerging field of Technoself Studies (TSS). The purpose of this chapter is to trace the recent emergence of this new interdisciplinary field of research by exploring its conceptual development, important issues, and key areas of current focus. The chapter contributes to the collection by bringing together complementary research areas that nurture in a multi-perspective examination of technology’s intertwinement with human identity.

Chapter two, “Identity Theories and Technology” (Robert Andrew Dunn, East Tennessee State University) gives a concise review of scholarly work concerning ways in which identity is affected by technology. It explores the following four perspectives captured in existing research: (1) differences between true and virtual identity, (2) influence of Internet in providing protective anonymity and cathartic disclosure, (3) how users navigate online life and experimenting with identities, (4) influence of virtual identity on communication practices and presentation of the self. It highlights the importance of the Internet age in shaping the ways in which identity is created and theorized about in a way that builds on an existing foundation of theoretical work on identity. In addition, it shows that theories of identity must take into consideration human relationships with technology which continue to evolve.

Chapter three, “The Ontology of the Subject in Digitization (Anna Croon Fors, Umeå University) plays an important role in Technoself Research in its focus on ontological questions. The chapter recognizes that a deep understanding of digitalization and its relationship to identity and/or subjectivity needs to address ontological considerations about how re (re)define human essence and our understanding of it within this digital era. The chapter defines technoself as an important placeholder position for the merging of technology and human experience as a whole. The chapter builds upon work from Haraway and Heidegger in its focus on the particular kinds of experiences that scaffold human understanding and appreciation of human identity and its ongoing construction through its intertwinement with digital technology. At the same time, it draws attention to the Importance of current digital technology in shaping contemporary conceptualizations of humans as technoselves.

To what extent do individuals create online selves based on their offline selves? Do they attempt to shape online personas using different similar communication strategies than employed in the offline world? How do individuals go about presenting themselves online in the absence of traditional social cues? Chapter four, “The Language of Technoself: Storytelling, Symbolic Interactionism, and Online Identity (Federica Fornaciari, University of Illinois at Chicago) applies the frameworks of symbolic interactionism and narrative theory to shed light on the importance of complexities of online self presentation and the new ways individuals are able to define themselves. This chapter also makes a valuable contribution to advancing theoretical perspectives well suited to understanding how people construct their online identity in the internet era.

Chapter five, “Of Paradigms, Theories, and Models: A Conceptual Hierarchical Structure for Communication Science and Technoself (Luciano L’Abate, Georgia State University) highlights the importance of CS is now coming into its own in this century because, now more than ever, communication and information are the lifeblood of our existence, both for survival as well as for enjoyment. From one generation to the next, the self is becoming increasingly technical to survive. In line with many of McLuhan’s works, this chapter sees the self as closely linked to communication and society, asserting that the transition from oral to visual communications and culture requires a new paradigm for examining communications and the construction of the self. This thoughtful treatment of communication sciences provides an innovative way to (re)think how we can conceptualize the self in a world of advancing communication technologies that have restructured how we interact and present ourselves to others.

How loose can the connection be between a body and its thoughts before there is no longer a single identity? Chapter six, “Mindclone Technoselves: Multi-Substrate Legal Identities, Cyber-Psychology, and Biocyberethics (Martine Rothblatt, Terasem Movement Foundation) delves into a fascinating conundrum that has yet to be resolved. This has both ethical and legal implications in a world where digital technology allows individuals to transfer memories and thoughts into digital databases which can be used to represent or recreate one’s identity from what is stored. The notion of *mindclones* examined by this author gets at the very real ethical and legal implications connected to the human practice of transferring digitized memories into a database linked to software that can reproduce a representation of an individual’s personality, recollections, and values.

Chapter seven “A Run for your [Techno]Self” (Alessandro Tomasi, Rhode Island College) makes the argument that there are three conceptions of human-machine relationship which are paradigmatically competing within society to influence future identity. Specifically, this chapter examines three competing ideals of humans in relation to technology (a non-technological conception of man, a paradigmatic human cyborg, and model of a man as an android free from organic ties) that capture current trends in the philosophy of technology revolving around the conceptualization of human beings. The author presents these conceptions of identity within the public sphere as competing views of what should be the boundaries of acceptable human-machine relationships. The author in this chapter provides an elegant rendering of the current state of philosophy of technology in trying to explain the boundaries of human identity that are debated within society where technological progress offers various ways of meshing humans and machines. The discussion puts into proper perspective the importance of what is at stake for human beings in deciding how to move forward with technological developments which allow humans to alter their minds and bodies in significant ways not possible before in human history.

Chapter eight, “The Mediation of Identity: Key Issues in Historic Perspective” (Stephen Marmura, St. Francis Xavier University) deals with the historical development of mediated identity by juxtaposing developments within communications and technologies with new approaches to identity construction. This chapter reviews the historical development of human identity from ancient times to the contemporary era. It explores the paradoxical nature of humans as technoselves and how developments in media technologies empower individuals to reach for greater self-expression and social/political engagement, while at the same time, challenge individuals who must contend with new forms of social control within the media.

Chapter nine, “The Digital Soul” (Daniel Black, Monash University) provides background scholarship of leading philosophical perspectives on the mind and technology. It traces key ideas from the philosophical literature that connect with contemporary work on mind/brain and technology. This excellent review helps situate current academic speculation on the future relationship between brain and computer: Has the mind been replaced the soul only to be replaced by the information processing which can perform as the mind does? Does harnessing computing and enhancement technologies provide an adequate representation of the human mind and its mental processes?

How can progress in human enhancement be aligned with human values in a world where advances in biotechnology occur faster than our conceptual and ethical understanding of them? Chapter ten, “Reasoning about Human Enhancement: Towards a Folk Psychological Model of Human Nature and Human Identity” (Samuel Wilson and Nick Haslam) delves into the problem context of understanding how technology is changing human nature and our understanding of what it means to be human. To this end, it reviews existing views on enhanced humans and contributes a novel model of humanness and human identity that promises deeper insights into the consequences of enhancement and our understanding of

what it means to be human. This chapter recognizes the serious implications for the future of humankind and what has to be done to safeguard technoself development. As the chapter warns, “These advances may well lead us towards a posthuman future, but whether this future is humanizing, superhumanizing or dehumanizing should be judged on the basis of a precise and carefully considered understanding of what it means to be human.”

Section 2 begins with Chapter eleven, “Cyber Identity: Our Alter-Ego?” (Christina Ionescu) and questions whether our cyber-identity a new identity or a continuation to an existing identity. Within a technological society, the realities of our world are legitimated by the complex relationship between media, technology, and society. The popularization of the Internet has allowed individuals to create media-enabled personalities and communities within virtual environments. This chapter deals with the question of whether virtual life represents a continuation of traditional social interactions, or whether it requires substantially different structures that allow unique access to and control over information exchanged online.

Chapter twelve, “The Empathy Paradox: Increasing Disconnection in the Age of Increasing Connection” (Sara Konrath, University of Michigan & University of Rochester Medical Center) discusses developments in personality traits that have emerged with the rise of new social media. The chapter assumes that a focus on new social media can provide a partial explanation for a shift in personality traits, particularly among recent generations of young Americans who have experienced social disconnection. The chapter reviews research which suggests that self-esteem and narcissism have been rising in college students from the late 1970s to 2010, with simultaneous declines in empathy. At the same time, this chapter goes beyond existing research to grapple with ways around the dilemma that new media could lead to increasing social disconnection.

Chapter thirteen, “Intellectual Disability, Identity, and the Internet” (Darren Chadwick, Chris Fullwood, and Caroline Wessen, University of Wolverhampton) explores the use of online interaction among individuals with intellectual disabilities and asks key questions. What are the key issues surrounding Internet use and access among individuals with intellectual disabilities? What is the quality of online interaction among individuals with intellectual disabilities? How do individuals with intellectual disabilities present themselves online? It furthers the technoself research by focusing on a population with a particularly strong connection to digital technologies. This chapter provides an excellent primer in the area of scholarship on technology and intellectual disability. It also makes suggestions on where future research in this area should go.

What are the influences of avatars on self-presentation and identity building? Can avatars influence human identity offline and how individuals perceive themselves? Chapter fourteen, “Avatars: Portraying, Exploring, and Changing Online and Offline Identities (Jesse Fox, Ohio State University and Sun Joo Ahn, University of Georgia) delves into the online life of the avatar (virtual representations of a human user controlled by that user). Avatars are popular in online gaming, social networking sites, and virtual worlds. This chapter explores the influence of avatars in shaping human identities, both online and offline. Implications and future directions for research on avatars are discussed.

Chapter fifteen, “The Ur-Real Sonorous Envelope: Bridge between the Corporeal and the Online Technoself” (Marlin Bates, University of the Pacific) raises multiple questions within technoself scholarship: What is meant by the notion of the “rhetorical creation of identity”? Where do the real and the ur-real meet in the world of the technoself? Can online technoselves extend beyond the online realm and shape the physical realm and how the human body acts within it? This chapter deals with the rhetorical construction of identity (how rhetoric can refer to or create a space for identity). Specifically, it explores

the notion of the “ur-real rhetoric” and how it extends beyond textual descriptions to influence the human mind. The chapter attempts to explain reality and ur-reality in terms of alignment/misalignment with the physical realm by reflecting on The World of Warcraft’s and Ultima Online’s influence on the human body and how it responds.

How does Internet use contribute to the preservation of ethnic identity and homeland affiliation among different generations of immigrants living in Israel? Chapter sixteen, “Immigrants’ Internet Use and Identity from an Intergenerational Perspective: Immigrant Senior Citizens and Youngsters from the Former Soviet Union in Israel” (Nelly Elias, Ben-Gurion University of the Negev, Israel) presents an empirical study of the need to preserve ethnic identity and homeland affiliation online. The study examines two groups of immigrants from the Former Soviet Union in Israel (youngsters aged 12-18 and senior citizens aged 65 and above). Findings help shed light on the importance of the Internet’s role in helping different generations of immigrants maintain ties with their country of origin and homeland identity.

Chapter seventeen, “Ancestor Veneration Avatars” (William Bainbridge) addresses why individuals create virtual representations of deceased loved ones and inhabit them online. It asks, “how does the creation of Ancestor Veneration Avatars (AVAs) provide a way to grieve and express admiration for lost loved ones?” Beyond the traditional photo album or home movie, the Internet provides new ways of preserving our attachments with loved ones (alive and dead). This chapter provides an empirical study of 18 Ancestor Veneration Avatars (human creation of virtual representations of their deceased loved ones). This phenomenon, popular in multiplayer online role-playing games and other non-game virtual worlds, allows individuals to create avatars consisting of fragments of other people from the past most especially members of. The study found that many study participants playing the role of a deceased loved one through an avatar in an online game world found the experience to be emotionally satisfying. The chapter provides a thoughtful discussion of the multiplicity of technoselves and the value attached to their online lives.

How can self-presence be defined and operationalized with the extension of the technoself into virtual environments? Chapter eighteen, “Self-Presence, Explicated: Body, Emotion, and Identity Extension into the Virtual Self” (Rabindra Ratan) addresses the need for a standardized concept of self-presence that describes how relationships between the self and virtual self-representations operate across virtual contexts. The author frames the discussion of self-presence in terms of how individuals connect to their virtual self-representations on three distinct levels of self (body, emotion, identity). The chapter attempts to explain this conceptual framework and how self-presence can be operationalized. The Self-Presence Questionnaire is developed based on the author’s examination of self-presence within numerous virtual contexts. This chapter provides excellent suggestions for by future research on self-presence and its measurement within virtual environments.

Chapter nineteen, “Assistive ICT and Young Disabled Persons: Opportunities and Obstacles in Identity Negotiations” (Sylvia Söderström, Sør-Trøndelag University College) inquires where the line should be drawn between mainstream technology and assistive technology when it comes to young disabled people’s identity negotiations? This chapter looks at the role of assistive ICT in young disabled people’s identity negotiations. In doing so, the chapter draws on the notion of identity multiplicity and Actor-Network Theory (ANT). To this end, the chapter describes a qualitative interview study where 23 young disabled Norwegians aged 15-20 years were probed on how they used assistive ICT in identity negotiations. Findings uncover the flexible, contextual, and relational nature of assistive ICT in young disabled people’s identity negotiations. The chapter also contributes valuable insights into the pervasive tension between differing public views of mainstream technology and assistive technology.



In Section 3 - Social Media and Virtual Life, chapter twenty, “The Tangible Lure of the Technoself in the Age of Reality Television” (Fernando Andacht, University of Ottawa) asks, “what is it that sucks people into reality television and the lives of the characters in them? What does this indicate about identity and how it is constructed?” This chapter explores the meaning of technoself within the context of reality television. It asks the fundamental question: How can one explain the attraction of reality television as a popular media genre without plot, actors, or director? This chapter looks at the self through the lens of Peirce’s semiotic theory of meaning and Goffman’s ideas on the order of interaction. This author provides a sophisticated analysis of indexical appeal of reality television that draws viewers in offering access to private human experiences. In describing the complex lure of this popular genre the author reveals, “It is the contrived and real spectacle of the constant efforts of the ‘countervailing self’, of that natural tendency of human beings to resist the imposed official self, which is the source of interesting and memorable moments in the viewing experience of this media phenomenon.”

How much of ourselves do we reveal online and does gender play a role in our identity strategies and how we represent ourselves to others? Chapter twenty-one, “Technoself-Presentation on Social Networks: A Gender-Based Approach” (Antonio García-Gómez) takes a look at social networking sites from a sociological and discursive standpoint in an effort to show how individuals use them in the construction of their identities. To this end, the author focuses on various strategies of Facebook users employed to construct their identity and manage how they present themselves online. The chapter discussion provides insight into typical identity claims made by men and women within a popular non-anonymous online setting. Of particular interest in this chapter is the recognition of gender-biased attitude of male and female participants. When speaking of male Facebook users, the author notes, “Male participants have claimed to be independent and therefore they do have no need for identity support. Facebook is viewed as an environment to express their opinion and claim their rights.” Such findings attest to the complexities of identity construction among technoselves within a world where individuals invest effort to navigate both real life and virtual interactions?

Chapter twenty-two, “Digitization and Consumerization of Identity, Culture, and Power among Gen Mobinets in South Africa” (Chaka Chaka) examines how mobile social networks (MoSoNets) take on a mediating role in shaping consumerization and power relations among Gen Mobinets (low and middle income black youths) in South Africa. The chapter makes the case that conceptualizations identity, culture, and power need to be reconfigured in the age of MoSoNets to account for tendencies of individuals to create multiple digital identities and engage in digital power gaming. It helps reveal the complex architecture of social networks and their role in mediating identity, culture and power. One of the most interesting aspects of this study was the link drawn between social networking and freedom. As noted in the chapter, MoSoNets appeared to contribute to user empowerment and awareness raising while providing a space for freedom.

How can social media bring professional athletes closer to their fans? Chapter twenty-three, “Stepping into the (Social Media) Game: Building Athlete Identity via Twitter” (Jimmy Sanderson, Clemson University) looks at Twitter as a tool for identity expression among rookie athletes in Major League Baseball (MLB), the National Basketball Association (NBA), National Football League (NFL), and National Hockey League (NHL). A study is presented where tweets were selected from athletes during the first round of the 2011 amateur draft of each sports league. The chapter uncovers how athletes use Twitter posts to characterize themselves as dedicated workers, pop culture consumers, sports fans, motivators, information seekers, and as everyday people. This work helps shed light on one way that social media is being used to leverage fan identification and likability through parasocial interaction with fans.

Chapter twenty-four, “Self, Self-Presentation, and the Use of Social Applications in Digital Environments” (José Carlos Ribeiro and Tarcízio Silva, Federal University of Bahia). What are the dynamics of self-presentation and social interaction within digital environments? This chapter explores the process of identity construction and self-presentation within digital environments. More specifically, it focuses on the use of social applications that promote the comparative analysis of virtual life and the retrieval of users’ social information. The discussion helps raise awareness of how digital applications offer users with new ways of monitoring, controlling, visualizing, and planning information published within social digital environments.

Chapter twenty-five, “A New Trend in Education: Technoself Enhanced Social Learning” (Li Jin, University of Westminster) examines self-concept as an educational goal that can be leveraged through the use of social networking. The chapter discusses the migration of social interaction online has enabled individuals to share opinions, insights, expertise, and interests. Beyond that, there is also indication that social networking contributes to collaboration, discovery, and identity development. The author draws attention to the technoself and how virtual environments are transforming the nature of learning as a social practice. In addition, a novel pedagogical and sociological model of learning is posited which combines technoself enhanced social learning with formal learning in education.

How did human communication evolve into cyber communication where the self is presented within in social networks? Chapter twenty-six, “Social Networking and Identity (or Technoself)” (Rachel Barker, University of South Africa) examines the presentation of the Technoself in social networks in by drawing on analogies with theatrical metaphors to articulate identity within social networks. This chapter provides a rich philosophical backdrop drawing on the work of Aristotle, Ricoeur, Habermas, Bourdieu, Kierkegaard, Sartre, Burke, and Goffman. To this end, it sketches out key evolutionary stages of human communication leading up to cyber communication in social networks. Building on previous work from the author, the chapter introduces key philosophical viewpoints on the presentation of self and identity based on theatrical metaphors. The rich discussion makes excellent links between the notion of technoself as a theatrical metaphors and supporting philosophical perspectives. Overall, the chapter makes the claim that, “in order to understand the Technoself and identity in this real life-world, initial understanding of the collective meaning of the performer (actor) in the cyber stage in which both the actor and those acted upon belong to the same ‘universe of discourse’ is needed.”

Chapter twenty-seven, “The Need for Identity Construction in Computer-Mediated Professional Communication: A Community of Practice Perspective” (Victor Ho, The Hong Kong Polytechnic University) addresses personal identity building among individuals of the same rank using computer-mediated professional communication within the workplace. The chapter delves into the member needs of communities of practice to construct desirable personal identities within computer-mediated professional communication. It also explores how members constructed these identities by exploiting various discursive strategies. The chapter draws attention to the many underlying complexities of identity construction in computer-mediated professional communication.

Is the need for heroism dead in the contemporary world of the technoself? Chapter twenty-eight, “To Be Shot at Without Result: Gaming and the Rhetoric of Immortality” (Jason Hawreliak, University of Waterloo) integrates ideas from the works of Ernest Becker, Gregory Nagy, and Ian Bogost to help illustrate the presence of the combat myth from Homer to Call of Duty, situating it within a rhetoric of heroism and ultimately, immortality. The chapter also introduces terror management theory and its application to videogame analysis and design. The discussion helps situate the immensely popular First Person Shooter (FPS) and Action Role Playing Game (ARPG) genres within the longstanding rhetoric

of heroism. The chapter author makes the case that the human need for heroism is not dead but is in constant development. This aligns with traditional ideas from Marshal McLuhan (1964) who remarked that, “The war of the icons, or the eroding of the collective countenance of one’s rivals, has long been under way.... It is really an electric battle of information and of images” (p. 370).

In Section 4 - Human Enhancement, Robotics, and Society, chapter twenty-nine, “A Human Affect Recognition System for Socially Interactive Robots” (Derek McColl and Goldie Nejat, University of Toronto) asks the question, how do robotic experts design for one-on-one human-robot-interactions? This chapter provides a real-time robust affect classification methodology intended for socially interactive robots designed for one-on-one human-robot-interactions (HRI). The methodology presented uses human body language to gauge how accessible an individual is to a robot during interactions. The method identifies body parts and then creates a 3D human body model. The chapter reviews experiments with this methodology where the methodology was applied to a socially interactive robot, Brian 2, during one-on-one interactions. This chapter shows the nuts and bolts reality of how robotics and human interaction are coming together.

Where does the human begin and the machine end in human-machine integration? Chapter thirty, “Effects of Human-Machine Integration on the Construction of Identity” (Francesc Ballesté, UOC, Spain and Carme Torras, Institut de Robòtica i Informàtica Industrial) explores the identity debate within the context of developments in social robotics, intelligent prosthetics, brain-computer interfaces and implant technology. It asks the question: What will the future of humankind look like? This chapter treats the body as the locus of human-machine integration and discusses the notion of cyborg in terms of its symbolic meaning, physical meaning, as a permeable level between nature and culture, and as an intermediate stage of a higher-order existence. One major contribution of this chapter lies in its critique of technological determinism and its recognition of the need for academics to unite under a multidisciplinary approach to provide a more comprehensive examination of the effects of human-machine integration on the construction of identity. This type of discussion is at the heart of evolving technoself research.

Chapter thirty-one, “Building a Technoself: Children’s Ideas about and Behavior Toward Robotic Pets” (Gail Melson, Purdue University) poses the following questions: “How do children view robotic pets and how might interaction with robotic pets affect child development? Are artificial friends and caretakers beneficial to children or is this just a form of parental negligence and neglect?” This chapter deals with the controversial role of robotic relationships during childhood. The chapter reviews key developments in robotic pets and attempts to reconcile these developments with children’s ideas about and behavior toward robotic pets. This chapter demonstrates how early technoself challenges arise in society with the advent of sociable robotic pets for children.

Are humanoid robots less expendable to humans than non-humanoid robotic applications? Why does the anthropomorphic character of robots matter to humans in group communication and decision-making within high risk circumstances? Chapter thirty-two, “Just Doesn’t Look Right: Exploring the Impact of Humanoid Robot Integration into Explosive Ordnance Disposal Teams” (Julie Carpenter, University of Washington) examines the short- and long-term outcomes (cultural, emotional, and ethical) associated with Explosive Ordnance Disposal (EOD) specialists working with anthropomorphic robots in daily team situations. The author uses an interdisciplinary lens to examine the effectiveness of small group communication and decision-making essential for EOD teams. The chapter highlights the complexity of EOD team and discusses U.S. Military aims to refine EOD robot design (i.e., inclusion of humanlike characteristics such as biped design, upright walking ability, and responsiveness to human voice and gesture commands). While humanlike characteristics may be useful for robots required to navigate hu-



man spaces, such advances may complicate emotional and ethical issues revolving around human team member perceptions of robot rights and autonomy. This forward-looking discussion anticipates pivotal questions that need to be addressed before authorities are able to safely introduce humanoid robots in high risk situations such as human-robot explosive ordnance disposal teams.

Chapter thirty-three, “Behavioral Analysis of Human-Human Remote Social Interaction Mediated by an Interactive Robot in a Cooperative Game Scenario” (Fotios Papadopoulos, Kerstin Dautenhahn, and Wan Ching Ho, University of Hertfordshire) reviews the integration of the first prototype of the “AIBOcom” system (an interactive game that employs pet-like robots as social mediators). This chapter describes a study where 10 pairs of participants were divided into two experimental conditions with different levels of synchronisation between robots. Data was drawn from questionnaires, video observations and log files to inform participant performance and characteristics. Findings revealed that participants enjoyed robot assisted remote communication but that the interaction mode was highly dependent on the objectives of interaction and communication between participants. This chapter shows that despite the attraction of using intelligent devices for controlling interfaces, “Human-robot interaction often requires guidance, especially when robots are utilized similarly to complex interactive haptic devices.”

Where does the human imagination about robotic-human identity portrayed in science fiction films reveal about human values and society? Chapter thirty-four, “The Human-Robot Continuum of Self: Where the Other Ends and Another Begins” (By Kristi Scott, Southern Illinois University Carbondale) explores the cinematic vision of identity in seminal films (*Blade Runner*, *Bicentennial Man*, and *A.I. Artificial Intelligence*) and examines the way humans and robots in these films deal with the identity of a robotic. Drawing on scholarship from various areas (posthuman, critical race, and philosophy of technology theories), the author posits a novel theoretical framework to describe how individuals perceive themselves amidst their technological creations. The chapter advances technoself research by leveraging the gathering of knowledge about societal views concerning the robotic-human identity continuum. This chapter highlights the importance of film studies in helping to leverage understanding about robotic-human identity. As indicated by the chapter author, “The way we act and identify ourselves within society is relevant to how we connect with the technological world we have created. One way to do this is through the use of media and the cinematic playground.”

Chapter thirty-five, “Robot Double: Hiroshi Ishiguro’s Reflexive Machines” (Yuji Sone, Macquarie University) provides an insider report on Japanese roboticist Hiroshi Ishiguro’s work with robotic machines. It views Ishiguro’s robots as reflexive tools and sophisticated pieces of engineering intended to replicate human movement and appearance. The author introduces the notion of reflexive anthropomorphism (self’s relation to the other) to discuss the culturally unique way of thinking about the self and identity underlying Ishiguro’s work on human-robot relation.

What is to become of human beings in a world where the human ability to manage machines and robots is slowly disappearing? Chapter thirty-six, “Understanding the Human-Machine Interface in a Time of Change” (Erica Orange) proposes that the ubiquitous nature of technology has contributed to a shift in human evolution. It examines how the connection between humans and technology has and will continue to change the way society defines what it means to be human. The chapter makes the case that the advancement of complex systems and networks has hampered individuals’ abilities to interface with these instruments that are playing an increasingly important role in daily life and society. To this end, the author raises questions to consider: How does the interoperability of human intelligence with machine intelligence influence human experience and self-identification? This line of questioning is at the heart of technoself research.

Chapter thirty-seven, “Identity in a Technological Society: Governance Implications” (Marc Saner and Jeremy Geelen, University of Ottawa) asks the crucial question: How do humans plan for and manage the adoption of emerging technologies that impact technoselves? This chapter delves into the policy implications of current technologies on the technoself. In line with the handbook objectives to address the changing notion of human identity in a society resulting from the adoption of new technologies, this chapter takes a step back at key governance and technology planning issues that must be taken into consideration. The authors provide a useful visual holistic model that helps frame key questions and drivers associated with the adaptation of emerging technologies that impact technoselves and the future of human identity. This chapter provides an excellent theoretical model for continued policy and planning work in technoself research.

## CONCLUSION

In terms of handbook development, it was an ongoing challenge to assemble such a broad set of research topics in a way that best reflected key developments in the field. Because the issues related to technology and identity are so broad, the *Handbook of Research on Technoself: Identity in a Technological Society* is necessarily selective. It attempts to advance in its own modest way a selective synthesis of contemporary research to help guide future scholarship in the field. Despite the modest aims of this project, the editor realizes that it is not possible to please everyone. It is hoped that this publication will stimulate the interest of sufficient numbers to continue developing this field. The *Handbook of Research on Technoself: Identity in a Technological Society* should be of interest to students, instructors, researchers, and technology leaders interested in advancing understanding of the intertwinement of technology and human identity within society.

## REFERENCES

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