Transhumanism and Posthumanism in Twenty-First Century Narrative

Transhumanism and Posthumanism in Twenty-First Century Narrative brings together 15 scholars from five different countries to explore the different ways in which the posthuman has been addressed in contemporary culture and more specifically in key narratives, written in the second decade of the 21st century, by Dave Eggers, William Gibson, John Shirley, Tom McCarthy, Jeff VanderMeer, Don DeLillo, Margaret Atwood, Cixin Liu, and Helen Marshall. Some of these works engage in the premises and perils of transhumanism, while others explore the qualities of the (post)human in a variety of dystopian futures marked by the planetary influence of human action. From a critical posthumanist perspective that questions anthropocentrism, human exceptionalism, and the centrality of the 'human' subject in the era of the Anthropocene, the scholars in this collection analyse the aesthetic choices these authors make to depict the posthuman and its aftereffects.

Sonia Baelo-Allué is Senior Lecturer at the Department of English and German of the University of Zaragoza (Spain) where she currently teaches US Literature and British and American Culture.

Mónica Calvo-Pascual is Senior Lecturer at the Department of English and German of the University of Zaragoza (Spain) where she teaches Contemporary US Literature and British Culture.

Perspectives on the Non-Human in Literature and Culture
Series Editor: Karen Raber, *University of Mississippi, USA*

Literary and cultural criticism has ventured into a brave new world in recent decades: posthumanism, ecocriticism, critical animal studies, the new materialisms, the new vitalism, and other related approaches have transformed the critical environment, reinvigorating our encounters with familiar texts, and inviting us to take note of new or neglected ones. A vast array of non-human creatures, things, and forces are now emerging as important agents in their own right. Inspired by human concern for an ailing planet, ecocriticism has grappled with the question of how important works of art can be to the preservation of something we have traditionally called "nature." Yet literature's capacity to take us on unexpected journeys through the networks of affiliation and affinity we share with the earth on which we dwell—and without which we die—and to confront us with the drama of our common struggle to survive and thrive has not diminished in the face of what Lyn White Jr. called "our ecological crisis." From animals to androids, non-human creatures and objects populate critical analyses in increasingly complex ways, complicating our conception of the cosmos by dethroning the individual subject and dismantling the comfortable categories through which we have interpreted our existence. Until now, however, the elements that compose this wave of scholarship on non-human entities have had limited places to gather to be nurtured as a collective project. "Perspectives on the Non-Human in Literature and Culture" provides that local habitation. In this series, readers will find creatures of all descriptions, as well as every other form of biological life; they will also meet the non-biological, the microscopic, the ethereal, the intangible. It is our goal for the series to provide an encounter zone where all forms of human engagement with the non-human in all periods and national literatures can be explored, and where the discoveries that result can speak to one another, as well as to scholars and students.

Bees in Early Modern Transatlantic Literature
Sovereign Colony
Nicole A. Jacobs

Transhumanism and Posthumanism in Twenty-First Century Narrative
Perspectives on the Non-Human in Literature and Culture
Edited by Sonia Baelo-Allué and Mónica Calvo-Pascual

The Ethos of Digital Environments
Technology, Literary Theory and Philosophy
Edited by Susanna Lindberg and Hanna-Riikka Roine

Transhumanism and Posthumanism in Twenty-First Century Narrative

Perspectives on the Non-Human in Literature and Culture

Edited by
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Contributors

Sonia Baelo-Allué is Senior Lecturer at the Department of English and German of the University of Zaragoza (Spain), where she currently teaches US Literature and British and American Culture. Her research centres on contemporary US fiction, trauma studies, 9/11 fiction, digital fiction and posthumanism. Her more recent publications include the journal articles "Transhumanism, Transmedia and the *Serial* Podcast: Redefining Storytelling in Times of Enhancement" (in *International Journal of English Studies*, 19(1), 2019) and "Exhaustion and Regeneration in 9/11 Speculative Fiction: Kris Saknussemm's 'Beyond The Flags'" (in *Revista de Estudios Norteamericanos*, 22, 2018). She has also published the book *Bret Easton Ellis's Controversial Fiction: Writing between High and Low Culture* (Bloomsbury, 2011) and co-edited with Dolores Herrero two books on the representation of trauma in literature: *The Splintered Glass: Facets of Trauma in the Post-Colony and Beyond* (Rodopi, 2011), and *Between the Urge to Know and the Need to Deny: Trauma and Ethics in Contemporary British and American Literature* (C. Winter, 2011).

Mónica Calvo-Pascual is Senior Lecturer at the Department of English and German of the University of Zaragoza (Spain) where she teaches Contemporary US Literature and British Culture. Her current research focuses on representations of trauma and post-humanity in 21st-century US and Canadian fiction, critical posthumanism, and gender studies. Her latest publications include journal articles such as "'The new children of the earth': Posthuman Dystopia or a Lesbian's Dream in Larissa Lai's *Salt Fish Girl*" (in *Orbis Litterarum*, 73, 2018) and "Eating Disorders and Constitutive Absence in Contemporary Women's Writing" (in *Journal of International Women's Studies* 18(4), 2017). She is the author of *Chaos and Madness: The Politics of Fiction in Stephen Marlowe's Historical Narratives* (Rodopi, 2011), and co-editor with Marita Nadal of *Trauma in Contemporary Literature: Narrative and Representation* (Routledge, 2014).

Francisco Collado-Rodríguez is Professor of American Literature at the Department of English and German of the University of Zaragoza, where he teaches courses on 20th-century American Literature and Popular Culture. His present research centers on Trauma and Posthumanity in contemporary

fiction. He has published articles and essays on Thomas Pynchon, Jeffrey Eugenides, Jonathan Safran Foer, E. L. Doctorow, Bharati Mukherjee, Kurt Vonnegut, Bobbie Ann Mason, Eric Kraft, and Michael Chabon, among others, and books on Richard Adams and Thomas Pynchon. In 2013 he edited *Chuck Palahniuk: Fight Club, Invisible Monsters, Choke* (Bloomsbury). Among his recent articles are: "Intratextuality, Trauma and the Posthuman in Thomas Pynchon's *Bleeding Edge*" (*Critique: Studies in Contemporary Fiction*, 57(3), 2016), "The Holy Fool's Revelation: Metafiction, Trauma, and Posthumanity in E. L. Doctorow's *Andrew's Brain*" (*Papers on Language and Literature*, 53, 2017), and "Narratives of the Rocket: Chabon's 'Amnesiac' Revisitation of Pynchon's Posthuman Zone" (*Critique: Studies in Contemporary Fiction*, 61(1), 2020). Personal webpage in Academia: https://unizar.academia.edu/FranciscoColladoRodríguez. Research team website: http://typh.unizar.es.

Maite Escudero-Alías is Senior Lecturer in the Department of English and German Philology at the University of Zaragoza (Spain), where she teaches 19th-century English literature and contemporary Irish literature. Her main research interests centre on literary criticism, feminism, and queer and affect theory in literature and culture. She is the author of *Long Live the King: A Genealogy of Performative Genders* (2009) and has published widely in journals such as *Journal of Gender Studies*, *The Journal of Popular Culture*, *Journal of Lesbian Studies*, and *Journal of International Women's Studies*. She is also the co-editor of *Traumatic Memory and the Ethical, Political and Transhistorical Functions of Literature* (2017).

Miriam Fernández-Santiago, PhD, is Senior Lecturer in English Literature at the University of Granada (Spain), where she teaches graduate and postgraduate courses on critical theory, postcolonial narrative and the cultures and literatures of English-speaking countries. She is the current lead researcher of research group "Studies in Literature, Criticism and Culture" (Ref. GRACO-HUM 676). At present, her research interests include Critical Posthumanism, Trauma, Vulnerability and Disability Studies.

Loredana Filip is a PhD candidate and research fellow on "Cultures of Vigilance" at Ludwig Maximilian University of Munich. She finished her Master's degree in North American Studies at Friedrich Alexander University of Erlangen-Nuremberg where she served as a lecturer, research assistant and tutor for international students. Her dissertation investigates the various forms of self-scrutiny in TED talks, mindfulness literature and science fiction novels, especially in the wake of contemporary self-help culture. Her research interests include critical posthumanism, affect theory, history of science, and contemporary literature.

Alexandra Glavanakova, PhD, is Associate Professor in American literature and culture at the Department of English and American Studies at Sofia University "St. Kliment Ohridski". Her research fields are US culture and

literature; the major cultural shifts in literacy, education, literary studies, the creation and reception of texts under the impact of digital technology. She has been involved in a number of projects on e-learning and digital humanities, and teacher courses in digital culture, multimodal writing and literature in the age of the Internet. Her major publication in this field is *Posthuman Transformations: Bodies and Texts in Cyberspace* (2014). Her other main areas of research and teaching are transcultural studies; immigration, race, and ethnicity in the USA and Canada; and the study of the Bulgarian Diaspora in the USA and Canada. Her major publication in this field is *Transcultural Imaginings. Translating the Other, Translating the Self in Narratives about Migration and Terrorism* (2016).

Stefan Herbrechter is a former Reader in Cultural Theory at Coventry University and Professor of English and Cultural Studies at Heidelberg University. He has published widely on English and comparative literature, critical and cultural theory, and cultural and media studies. His main publications related to his current research focus, posthumanism and its critique, include *Autoimmunities* (2018); *Narrating Life* (2016); *European Posthumanism* (2016); *Posthumanism – A Critical Analysis* (2013); *Posthumanist Subjectivities* (2012); *Posthumanist Shakespeares* (2012); *Posthumanismus – Eine kritische Einführung* (2009); *Cy-Borges: Memories of the Posthuman in the Work of Jorge Luis Borges* (2009); and *Discipline and Practice* (2004). He is director of the *Critical Posthumanism Network* (http://criticalposthumanism.net/) and general editor of its online "Genealogy of the Posthuman" project (http://criticalposthumanism.net/genealogy/). For more details and a full bibliography please see his homepage (http://stefanherbrechter.com).

Carmen Laguarta-Bueno is a Lecturer at the Department of English and German Philology of the University of Zaragoza. She has recently completed her dissertation on transhumanism and the representation of human enhancement technologies in 21st-century US fiction, with a special focus on the work of Richard Powers, Dave Eggers, and Don DeLillo. She has also been an academic visitor at the University of California, Riverside (2018) and at Trinity College, Dublin (2019), and she has published articles in several peer-reviewed journals: *ES Review* (2018), *Revista de Estudios Norteamericanos* (2018), *Nordic Journal of English Studies* (2019).

Margalida Massanet Andreu is an English teacher currently working at IES Calvià (Mallorca). Previously, she held other teaching positions around the island and at the College of the Holy Cross in Worcester, Massachusetts, where she participated both as a writer and editor in the college magazine, *Fósforo*. Margalida holds a BA in English Studies from the University of the Balearic Islands (UBI), where she also obtained her Master's Degree in Modern Languages and Literatures. In her MA thesis she investigated emerging tendencies within the field of literary criticism which encompass Metamodernism, affect theories and the place of fiction

in the 21st century. Her interests encompass the representation of neocapitalist societies in globalization, posthuman, and metamodern subjects, and mass media and digitization in writing, mostly in British novels. She is now a collaborator in the research group Modern and Contemporary Anglophone Literatures (LITANGLO) at the UBI, in which she continues her investigations.

Esther Muñoz-González is a Lecturer at the Department of English and German Philology of the University of Zaragoza. She has recently completed her PhD on Margaret Atwood's dystopian novels. Her main research interests lie in contemporary US fiction from a posthumanist perspective, with a special interest in dystopian representations of the Anthropocene period and Cli-fiction. She is the author of several articles in peer-reviewed academic journals (*Journal of English Studies*, 2017; *ES Review*, 2017; *Verbeia*, 2018; *Brno Studies in English*, 2018; *Complutense Journal of English Studies*, 2018; *Odisea*, 2018; *Revista de Estudios Norteamericanos*, 2019).

Susana Onega is Emeritus Professor of English Literature at the Department of English and German Philology of Zaragoza University. She is a coopted member of the *Academia Europaea* (AE) since 2008, and an appointed member of the Section Committee of Literary and Theatrical Studies of AE since 2015. She is also the former President of the Spanish Association for Anglo-American Studies and the former Spanish Board member of the European Society for the Study of English. She was granted the title of Honorary Research Fellow at Birkbeck College (University of London) in 1996. Professor Onega has written extensively on contemporary fiction, literary criticism and theory, and ethics and trauma. She is the author of five monographs, including *Form and Meaning in the Novels of John Fowles* (UMI Research Press, 1989), *Metafiction and Myth in the Novels of Peter Ackroyd* (Camden House, 1999), and *Jeanette Winterson* (Manchester University Press, 2006). She has edited or coedited 14 volumes, including *Narratology: An Introduction* (Longman, 1996); *Refracting the Canon in Contemporary Literature and Film* (Rodopi, 2004); *Trauma and Romance in Contemporary British Fiction* (Routledge, 2013); *Liminality and The Ethics of Form in Contemporary Trauma Narratives* (Routledge, 2014); *Victimhood and Vulnerability in 21st-Century Fiction* (Routledge, 2017); *Traumatic Memory and the Ethical, Political and Transhistorical Functions of Literature* (Palgrave, 2017); *The Wounded Hero in Contemporary Fiction: A Paradoxical Quest* (Routledge, 2018); and *Transcending the Postmodern: The Singular Response of Literature to the Transmodern Paradigm* (Routledge; 2020).

Justus Poetzsch studied Sociology and Psychology at the Technological University of Dresden. His diploma thesis focused on the phenomena of space colonization from an anthropological and sociological perspective. Since then, his scientific interests have been oriented around the transforming

perceptions of the *conditio humana* and related worldviews, which he was also able to continue in the interdisciplinary graduate school 'Life Sciences – Life Writing' at University Mainz. In this structured PhD-program, Justus is currently doing research about a potential paradigm shift concerning the question 'what it means to be human' in the era of Anthropocene. By comparing transhuman technological transcendence and posthuman philosophy of becoming, other new r(el)ationalities of environment and humankind, world and worldlings, nature and culture will be developed to reframe anthropology *for* planet earth and *not* vice-versa, as it used to be done.

Monica Sousa received her BA (Honors) in English in 2017 and her MA in English in 2018 from Brock University. She is currently pursuing a doctoral degree in the department of English at York University in Toronto, Ontario. Monica is specializing in contemporary literature, and her research focuses on animal studies, posthumanism, and technology in the genres of contemporary speculative fiction and science fiction. Her research explores human and nonhuman relations in contemporary speculative/science fiction novels, with a focus on technologically-altered animals (genetically modified animals or animals with robotic attachments or cybernetic enhancements). She is interested in the practice of empathy and what it means to empathize with technologically modified animals (or if it is even possible).

Sherryl Vint is Professor of Media and Cultural Studies at the University of California, Riverside, where she directs the Speculative Fictions and Cultures of Science program. Her books include *Bodies of Tomorrow, Animal Alterity*, and *Science Fiction: A Guide to the Perplexed*. She is an editor of the journals *Science Fiction Studies* and *Science Fiction Film and Television*, and the book series *Science and Popular Culture*. She has edited several books, most recently *Science Fiction and Cultural Theory: A Reader*. Her current research project, *The Promissory Imagination: Speculative Futures and Biopolitics*, explores the exchanges between speculative imagination and material practice in biotechnology.

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(Trans/Post)Humanity and Representation in the Fourth Industrial Revolution and the Anthropocene

An Introduction

Sonia Baelo-Allué and Mónica Calvo-Pascual

The present is a time of change, of technological development, and exponential growth—a quantum leap in human progress. It is also a time of social inequality, of climate change, of dehumanization, and unemployment. It all depends on the perspective that we adopt when trying to account for the fluctuations that have taken place in the last few decades. Since the 18th century there have been four industrial revolutions; whether we consider these revolutions as marks of progress or as processes of dehumanization depends on our understanding of what progress and being human actually means.

1 The Fourth Industrial Revolution

The history of the industrial revolutions is often told as a history of progress. The first industrial revolution (1760–1840) focused on mechanical production thanks to the steam engine; the second industrial revolution (1870–1914) brought mass production thanks to electricity and the assembly line; the third industrial revolution (the latter half of the 20th century) brought the development of information theory and digital computing and electronics, moving from mechanical and electronic technology into digital electronics. According to Brynjolfsson and McAfee, in the first industrial revolution it was steam power that allowed humans "to overcome the limitations of muscle power, human and animal, and generate massive amounts of useful energy at will […] the first time our progress was driven primarily by technological innovation" (2016, 6–7). They consider that, since the 21st century, we are living in a second machine age in which digital technologies have boosted human mental power, in the same way as the first machine age was a boost to physical and mechanical power. If our muscles were enhanced in the first machine age, it is our brains that are being enhanced in this second machine age. The new technologies are exponential, digital, and combinatorial. These three features have made possible the creation of Artificial Intelligence (AI) and a common digital network that connects most people on the planet (90).

Klaus Schwab, the founder and executive chairman of the World Economic Forum, considers that this second machine age can be better understood as a fourth industrial revolution—a concept that he used for the first time in 2016 in

the World Economic Forum, and that, owing to its scale, scope, reach, and complexity, constitutes a paradigm shift which is transforming in an exponential way how we live, express ourselves, work, connect with others, and get information (2016, 2). This revolution builds on the digital one but it is characterized by a set of emerging technologies that include "artificial intelligence (AI) and robotics, additive manufacturing, neurotechnologies, biotechnologies, virtual and augmented reality, new materials, energy technologies, as well as ideas and capabilities we don't yet know exist" (2018, 7). However, what really defines this revolution is the fusion and harmonisation of these technologies and the way they co-evolve and interact with one another across the physical, digital, and biological domains (2016, 8; 2018, 3).

Brynjolfsson and McAfee also think that we are at an inflection point in human evolution because of the way that digital technologies are progressing and bringing a profoundly beneficial transformation. In the same vein, Schwab believes that emerging technologies "interact with one another and co-evolve as our relationship with data is transformed, the physical world is reformed, human beings are enhanced and new systems with huge power envelop us" (2016, 3). This is a standpoint similar to that of transhumanists but whereas transhumanism, as we will see, is a social and philosophical movement that promotes human-enhancement technologies, Brynjolfsson, McAfee, and Schwab are more concerned with the ways that technological change can affect the economy, industries, and civil society.

In this sense, Brynjolfsson and McAfee believe that there will be an increase in the variety and volume of people's consumption bringing more choice and freedom. Bounty will be one of the main economic consequences of this progress with the increase in volume, variety, and quality of products and the decrease in cost (12). The negative aspect of this transformation has to do with the economic disruption it will bring about since many jobs will be lost to computers, robots, and other digital technologies. There will also be an increase in spread—the differences among people in economic success. Schwab also sees rising inequality as one of the main risks of the fourth industrial revolution, together with temporal job destruction (especially middle-income routine and repetitive jobs) and polarization, owing to the changes in the nature of work (2016, 35–38).

Luciano Floridi has also studied the consequences of the fourth revolution, but focusing on how it is changing our sense of self and our relationships. His perspective is more philosophical and starts from the idea that information and communication technologies are modifying our concept of reality and transforming it into an infosphere. We are turning into informational organism (inforgs) totally integrated into this infosphere—that is, the whole informational environment "constituted by all informational entities, their properties, interactions, processes, and mutual relations" (2014, 41), which includes the cyberspace but also offline and analogue spaces of information. One of the main consequences of the infosphere is that since interfaces are becoming less visible "the threshold between *here (analogue, carbon-based, offline)* and *there*

(*digital, silicon-based, online*) is fast becoming blurred […] [t]he digital online world is spilling over into the analogue-offline world and merging with it" (2014, 43). This new space is what Floridi calls "onlife," in which the threshold between online and offline is less and less clear to establish. Two information technology (IT) phenomena inextricably linked to the fourth industrial revolution account for this experience: Machine to Machine communication (M2M) and The Internet of Things (IoT).

M2M is direct communication, by sharing data between two network devices using any wired or wireless communication. Automated teller machines use this technology when approving transactions without human intervention. IoT offers more functionality, as it involves a network of devices that communicate through a cloud networking platform. Schwab considers to be IoT one of the main bridges between the physical and the digital applications that the fourth industrial revolution provides (2016, 18). Elvira Wallis, Senior Vice President and Global Head of Internet of Things at SAP, goes even further by claiming that IoT is the backbone technology behind Industry 4.0, as IoT implementations are leading to "smart factories and digital supply chains powered by data, insight, and automation […] With IoT driving Industry 4.0 forward, machines and business processes are now interacting without human intervention—freeing enterprises to focus on business outcomes" (2020).

These technologies are becoming part of our environment in seamless ways which could lead to unexpected outcomes. On a panel at the World Economic Forum, Eric Schmidt, former Google chairman, claimed that:

> the Internet will disappear. There will be so many IP addresses, so many devices, sensors, things that you are wearing, things that you are interacting with, that you won't even sense it. It will be part of your presence all the time. Imagine you walk into a room, and the room is dynamic. And with your permission and all of that, you are interacting with the things going on in the room.
>
> (Schmidt in Szalai, 2015)

At present, ambient computing has made it possible for computing platforms to seamlessly integrate in our surroundings, as is the case when we speak to Apple's Siri or Google Assistant instead of providing active input into a computer.

All these new technologies and scientific advances have consequences in how we define ourselves, how we connect with others, and how communication is established. On the one hand, M2M and IoT create a whole network of communication from which humans are excluded. Is our ability to communicate complex and abstract ideas not what makes us human? Do M2M and IoT not extend that ability beyond ourselves? On the other hand, we are merging with these technologies when we talk to an intelligent assistant like Siri. In this sense, Brynjolfsson and McAfee predict two amazing events that will take place in the near future: "the creation of true

machine intelligence and the connection of all humans via a common digital network, transforming the planet's economics" (251). These two events would end with two defining features that sets us apart from other animals: our intelligence and our individuality. Technology is putting into question how we define ourselves and what our role is in this changing environment.

In this sense, Floridi considers that the fourth industrial revolution has put into doubt our superior thinking abilities, as we are not the only ones processing information logically and autonomously. As Floridi puts it, we are inforgs embedded in the infosphere that we share with other natural and artificial agents, therefore we are not even at the centre of the infosphere (94). This destabilisation of our position is not something new, as science has been changing our understanding of the world and of ourselves for centuries. Floridi summarizes the three previous revolutions and how we came to be in the position we are now (87–100). Humans used to think that God had placed them on Earth at the centre of the universe until Nicolaus Copernicus (1473–1543) published *De Revolutionibus Orbium Coelestium* and his theory about the movement of planets around the sun with its reconsideration of our own place and centrality. After the Copernican revolution, a second industrial revolution took place as a result of the discoveries of Charles Darwin (1809–82), which were published in *On the Origin of Species*, which also displaced human beings from the centre of the biological kingdom. The third industrial revolution destroyed our belief that we were at least the masters of our own mental contents and thoughts as René Descartes's "I think therefore I am" had succinctly put it in the 17th century. Sigmund Freud (1856–1939)—and later neuroscience—brought about a third industrial revolution with the idea that the mind is not fully transparent, but also unconscious and has defence mechanisms that can make it opaque and hard to understand. The fourth industrial revolution has not put us at the centre of the infosphere; we depend on our smart devices, as data and machine-driven operations are becoming more common. We complement machines, but, as Brynjolfsson and McAfee optimistically put it, "it's great to be a complement to something that's increasingly plentiful" (182).

Schwab also sees biotechnology as a key field in the fourth industrial revolution (2016, 21–25; 2018, 157–166). Our bodies and what we can do with them are also subject to change, owing to advances in the biological realm. Genetic sequencing, the activation and editing of genes, and synthetic biology are advances that will allow us to create genetically modified plants, animals, and even designer babies. Technology and biology will also combine in bioprinting, which makes use of 3D printing and gene editing to create living tissue or even transplant organs in the future. All this, together with the advances in neurotechnology and the potential for human enhancement, make it necessary to reconsider what it means to be human from a biological perspective and where the limits to what we can do are.

The fourth industrial revolution is not without contradictions. On the one hand, our role seems to diminish in an informational environment that

engulfs us as machines become more and more intelligent and we become more dependent on them. On the other hand, the combination of the digital, physical, and biological dimension is leading to great advances in science and technology contributing to human enhancement, both of our bodies and our minds. These contradictions make the realm of the posthuman an especially attractive subject to explore.

2 Transhumanism, Posthumanism, Critical Posthumanism

The notion of humanity has long been interrogated by a wide array of disciplines, more often than not, from an anthropocentric perspective: the question "what is it that makes us human?" has typically revolved around finding the traits that make us essentially distinct from—and, implicitly, superior to—the non-human, be they other animal species or machines. The term 'posthuman' involves a leap to pondering the *future* of humanity or, more specifically, what comes after humanity as we know it. As Francesca Ferrando points out:

> [i]n contemporary academic debate, 'posthuman' has become a key term to cope with an urgency for the integral redefinition of the notion of the human, following the onto-epistemological as well as scientific and bio-technological developments of the twentieth and twenty-first centuries.
>
> (2013, 26)

Much has been published around the concept 'posthuman' in various attempts to dispel the theoretical confusion provoked, mainly, by the parallel but dissimilar use of the term by the disciplines of Transhumanism and Posthumanism, which "share a common perception of the human as a non-fixed and mutable condition" (Ferrando 2013, 27) and "consider the question of human coevolution with technology" (Ranisch and Sorgner 2014, 8). However, they emerge from different philosophical traditions and hold divergent positions with respect to Classical and Enlightenment humanism. Thus, while Transhumanism "aims at liberating humans from their biological limitation" by applying scientific and technological innovations and "can be seen as an *intensification* of humanism" in its privilege of the rational mind over the body and progress beyond natural boundaries (17; emphasis in the original), Posthumanism amounts to a criticism of humanism, as it "hopes to liberate humans from the harmful effects of the established humanist paradigms by debunking its false assumptions" (17) about the universalism and exceptionalism of what constitutes humanity. Thence, both attempt to "move beyond humanism" as they consider "the humanist 'human' as outdated" (17) in physiological and conceptual terms, respectively. In what follows, we will aim at shedding some further light onto that conceptual confusion and at providing clear-cut definitions of both concepts.

The term transhumanism was coined by Julian Huxley in 1957 and first defined in its current sense by Max More in 1990. Nick Bostrom, one of its

founders, describes it as "a loosely defined movement that […] promotes an interdisciplinary approach to understanding and evaluating the opportunities for enhancing the human condition and the human organism opened up by the advancement of technology" (2005, 3). Transhumanists' notion of enhancement encompasses "radical extension of human health-span, eradication of disease, elimination of unnecessary suffering, and augmentation of human intellectual, physical, and emotional capacities" (3) by means of current developments like genetic engineering and IT, and "anticipated future ones, such as molecular nanotechnology and artificial intelligence" (3). In this volume, we will follow Bostrom's definition of the term 'transhuman' as denoting "transitional beings, or moderately enhanced humans, whose capacities would be somewhere between those of unaugmented humans and full-blown posthumans" (5). Bostrom understands the posthuman as "a radically enhanced human"—the furthest degree of transcendence of human limitations that a person can reach—while a transhumanist is, for him, "somebody who accepts transhumanism" (5).

Unlike transhumanism, which can be seen as a form of hyper-humanism, posthumanism involves a break with humanism. Coined in 1977 by Ihab Hassan, the latter cannot be described as one coherent movement. In line with the humanist privilege of the mind over the material body, one of the earliest expressions of posthumanism—cybernetic posthumanism—privileged the view of the human being as pure information patterns that could be transferred from one medium to another and remain unchanged. In the cybernetic paradigm that developed from the mid-1940s onwards, "humans were to be seen primarily as information-processing entities who are *essentially* similar to intelligent machines" (Hayles 1999, 7; emphasis in the original). As N. Katherine Hayles remarks in her groundbreaking work *How We Became Posthuman*, "the erasure of embodiment is a feature common to *both* the liberal humanist subject and the cybernetic posthuman. Identified with the rational mind, the liberal subject *possessed* a body but was not usually represented as being a body" (1999, 4; emphasis in the original). Cybernetic posthumanism thus shares with transhumanism the view of the human body as an accessory that can be either improved (enhanced) or simply ignored (as the mind is what defines humanity and it can therefore be disembodied). Paving the way for later critical posthumanist theorists, Hayles sets out to contest the dislodgement between materiality and information—in her own words, "for information to exist, it must *always* be instantiated in a medium" (13; emphasis in the original)—and vindicates:

> a version of the posthuman that embraces the possibilities of information technologies without being seduced by fantasies of unlimited power and disembodied immortality, that recognizes and celebrates finitude as a condition of human being, and that understands human life is embedded in a material world of great complexity, one on which we depend for our continued survival.
>
> (5)

The implications of Hayles's interrogation of Cartesian dualism and its privilege of the abstract realm as the site of identity build up the foundations of the nature-culture continuum put forth by critical posthumanism, which will be developed further below. The two main ingredients of this approach are (1) continuity between body and mind as integral and inseparable parts of the human subject;[1] and (2) continuity between the human and the non-human (be it machine, animal, the environment), as opposed to the humanist and transhumanist belief in human exceptionalism.

Hayles's argument that "[o]nly because the body is not identified with the self is it possible to claim for the liberal subject its notorious universality, a claim that depends on erasing markers of bodily difference, including sex, race, and ethnicity" (1999, 4–5) will be taken up by authors like Sherryl Vint, Rosi Braidotti, and Stefan Herbrechter in their versions of critical posthumanism—in itself an ethical project that explores what it means to be human from an inclusive perspective whereby the organic body, the machine, and other life forms co-evolve and are interdependent. According to Braidotti, "Humanism's restricted notion of what counts as the human is one of the keys to understand how we got to a post-human turn at all" (2013, 16). The ideal of Man as the measure of all things that Braidotti refers to, first formulated by Protagoras and later canonized by Leonardo da Vinci in his Vitruvian Man, is exposed in critical posthumanism as a regulatory model that encapsulates what is considered essentially human: the bodily unmarked, i.e., male, white, able-bodied, and presumably heterosexual. As a corollary of the Classical humanist model of human perfection, "the sexualized, racialized, and naturalized others […] are reduced to the less than human status of disposable bodies" (Braidotti 2013, 15), in opposition to which Braidotti proposes "an affirmative posthuman position" (38) that transcends the centrality of 'Man' through the celebration of difference. In Vint's words:

> [c]ertain specificities are thus coded as 'outside' human identity, while others that might be thought of as equally marked and specific are instead taken to be transparent and universal. Returning the specificities of embodied experience is one of the ways of resisting such erasures.
>
> (2007, 11)

Indeed, the bases of critical posthumanism, as Braidotti acknowledges, are to be found in the anti-humanist, poststructuralist movements of the 1970s and, particularly, in the 'politics of location' advocated by feminists like Adrienne Rich. Thus, Braidotti calls for a posthuman subjectivity that is "rather materialist and vitalist, embodied and embedded, firmly located somewhere" (2013, 51). In this posthuman exploration and reclaiming of the material, Vint eloquently explains the fundamental yet liminal position that the body occupies "between self and not-self, between nature and culture, between the inner 'authentic' person and social persona" (2007, 16). She takes up the definition of the body that Elizabeth Grosz elaborates in

Volatile Bodies as "a Möbius strip": that which "acknowledges both the psychical or interior dimension of subjectivity and the surface corporeal exposures of the subject to social inscription and training; a model which resists, as much as possible, both dualism and monism" (Grosz 1994, 188). In Vint's words, Grosz's approach to the body:

> offers a way to conceive of the two aspects of the body (interiority and surface) as always interacting yet not reducible to the same thing, which allows analysis to address cultural inscription on both the body and the subject, yet also looks for ways that the subject can resist such cultural marking and offer alternative possibilities. The human body, like the human subject, is a product of both culture and nature.
>
> (2007, 16–17)[2]

The nature-culture continuum that Hayles and Braidotti allude to extends beyond the quality of the subject to a wider understanding of the world as such. Taking Spinoza's monism as point of departure, Braidotti develops her notion of *zoe* (natural life, as opposed to *bios*, or human life) as the non-hierarchical conjunction and co-development of human and nonhuman 'earth' others. In her own words:

> The posthuman dimension of post-anthropocentrism […] deconstructs […] species supremacy, but it also inflicts a blow to any lingering notion of human nature, *anthropos* and *bios*, as categorically distinct from the life of animals and non-humans, or *zoe*. What comes to the fore instead is a nature-culture continuum in the very embodied structure of the extended self […]. *Zoe* as the dynamic, self-organizing structure of life itself […] stands for generative vitality. It is the transversal force that cuts across and reconnects previously segregated species, categories and domains. *Zoe*-centred egalitarianism is, for me, the core of the post-anthropocentric turn: it is a materialist, secular, grounded and unsenti-mental response to the opportunistic trans-species commodification of Life that is the logic of advanced capitalism.
>
> (Braidotti 2013, 60, 65)

Sharing this overall concern with environmental exploitation and dwelling on the ethics of human-nonhuman relations, Stacy Alaimo proposes the concept of trans-corporeality; human corporeality is, for her, "always inter-meshed with the more-than-human world" (2010, 2), a basic instance being the presence of millions of bacteria in our organism, or the processes of eating and digesting, whereby nutrients from plants and/or animals become part of our flesh (12). This is significant in the context of a post-anthropo-centric posthuman ethics since, according to Alaimo, "understanding the substance of one's self as interconnected with the wider environment marks a profound shift in subjectivity" (20), preventing a sense of separation

between the human and "the interconnected, mutually constitutive actions of material reality" (24). In a similar vein, Manuela Rossini's vision of critical posthumanism entails:

> a radically democratic future in which […] the experience of embodiment in all its richness and variety marks post/humanity and in which the lived body remains the ground not only of individual subjectivity but also of the interaction and connection with the world and with others.
>
> (2005, 33)

Unfortunately, and far from this ethical awareness of our being one with the universe, the intricate, intimate connection between the human and nonhuman does also present an uglier face: namely, the irreparable damage that human action is inflicting upon the environment, to such a degree that human intervention has apparently brought the Holocene to an end.

3 On the Anthropocene

In 2000 chemist Paul J. Crutzen and biologist Eugene F. Stoermer coined the term 'Anthropocene' to refer to a new geological era marked by the effects of human intervention on the environment to the extent that those effects can be scientifically verified in the analysis of geological strata. Human-induced environmental change, connected to scientific progress and accelerated technological development, is so wide-ranging and ubiquitous that it is having the effect of a geological force comparable to volcanoes, earthquakes, or meteors. In other words, the Anthropocene signals the moment in which human beings officially become responsible for the consequences of our own actions upon the Earth. The Anthropocene Working Group (AWG), founded in 2009 by the International Commission on Stratigraphy, has acknowledged that the Anthropocene can effectively be considered an era within the geological time scale (Dillon, 2018, 5–6). Crutzen and Stoermer originally located the beginning of the Anthropocene in the second half of the 18th century, at the onset of the Industrial Revolution in the United Kingdom and continental Europe and James Watt's development of the steam engine in 1784. In turn, the AWG first located the beginning of this epoch around 1800, as geological research signalled that time as the beginning of the increasing global concentration of carbon dioxide and methane in the analyses of air trapped in the polar ice, thereby linking for the first time the notion of the Anthropocene with the concern with climate change. However, in 2016 the AWG proposed a later date, 1945, owing to the impact of "the development and testing of nuclear weapons" (Dillon, 2018, 7; see also Zalasiewicz, 2014), and of the so-called Great Acceleration of the third industrial revolution, characterized by the massive use of plastics and aluminium, together with the excessive exploitation of natural resources in order to provide for the new market and consumerist needs created in the

Western world, which brought about further environmental damage such as the acidification of oceans, ozone depletion, and biosphere degradation. Indeed, one of the main issues regarding the Anthropocene is climate change, which could bring about super-storm-induced involuntary land slippages, the rise of sea levels, water and food scarcity, or the rise of temperatures beyond humans' adaptation capacity (Pereira Savi, 2017, 950–951). In this sense, in November 2017 more than 15,000 scientists worldwide signed a 'second warning' to humanity concerning the risks of environmental devastation provoked by current industrialization, including dramatic climate change and a sixth mass extinction whereby many contemporary life forms might be annihilated or in serious risk of extinction by the end of the 21st century (Ripple et al., 2017; see also Steffen et al., 2011).

Despite the lack of general agreement regarding the date when the Holocene gave place to the Anthropocene, awareness of living in the new era starts, as the data above suggest, in the very early 21st century—so much so that it has become a central theme in an important body of contemporary literature dealing with environmental concerns, the possibility of human extinction and the future inhabitability of planet Earth. As Rosi Braidotti puts it, "the fact that our geological era is known as the 'anthropocene' stresses both the technologically mediated power acquired by *anthropos* and its potentially lethal consequences for everyone else" (2013, 66). As philosopher Eugene Thacker points out: "The world is increasingly unthinkable—a world of planetary disasters, emerging pandemics, tectonic shifts, strange weather, oil-drenched seascapes, and the furtive, always-looming threat of extinction" (2011, 1). In his denunciation of anthropocentrism in Western philosophy and culture, Thacker asserts that, in order to survive in the Anthropocene, human beings must change our anthropocentric viewpoint for a planetary one and confront the possibility of a "world-without-us."[3] Advocates of the fourth industrial revolution see the problem very differently and, instead of changing anthropocentric viewpoints, they see the human at the centre of the revolution. As Marc R. Benioff claims, the fourth industrial revolution brings "an empowering, prosperous, human-centered future for all" (2016, viii). They also claim that through geoengineering and technological interventions, the effects of human impact on the environment and the atmosphere can be corrected. These corrections would actually be further interventions like "installing giant mirrors in the stratosphere to deflect the sun's rays, chemically seeding the atmosphere to increase rainfall and the deployment of large machines to remove carbon dioxide from the air" (Schwab, 2018, 203).

We cannot conclude this section without acknowledging the fact that the very concept 'Anthropocene' has been questioned by critics like Donna Haraway (2015), who prefers the use of Andreas Malm and Jason Moore's notion of 'Capitalocene,' highlighting the fact that the whole of humanity does not contribute to the same extent to the destruction or geological transformation of the planet; rather, they argue that environmental damage

results from the over-exploitation of natural resources by capitalism as a socioeconomic and productive system, where most human beings as a species are alienated from the effects of their own work. Malm and Alf Hornborg emphasize how, from the first industrial revolution onwards, "capitalists in a small corner of the Western world invested in steam, laying the foundation stone for the fossil economy" (2014, 92), blaming what they call "advanced capitalist countries" for the current situation. According to their data, "in the early 21st century, the poorest 45% of the human population accounted 7% of emissions, while the richest 7% produced 50%" (64). In turn, the use of 'Capitalocene' is challenged by historian Dipesh Chakrabarty, who admits that not all societies are equally responsible for planetary destruction and adds that an egalitarian distribution of wealth and industrial capacity would increase the abuse of fossil fuels and the resulting pollution.

The state of affairs described above has found expression in contemporary debates in the humanities and in cultural and literary production. We can talk about a nonhuman turn that is shared by the interest in the Anthropocene, ecocriticism, ecofeminism, critical posthumanism, queer ecologies, etc., whose implicit goal is challenging the dichotomies that for centuries have been used as grounds to justify the oppression of women, ethnic minorities, nature, and other beings considered to be nonhuman, infrahuman, or "less than human" in Braidotti's terms. Likewise, the 21st century is witnessing a rapid expansion of the concern for the nonhuman in literature, including issues like environmental disasters, the impact of excessive meat eating and production, of genetically modified seeds in agriculture (see authors like Margaret Atwood, Emily St. John Mandel, Ruth Ozeki, or Larissa Lai) and the proliferation of cli-fi (climate fiction), encompassing perhaps the most significant body of cultural production on the Anthropocene.

4 Literary Fiction and the Posthuman

In the time of the posthuman in which the physical, digital, and biological domains co-evolve and interact, and in which the boundaries of the human are blurred and our position in the universe questioned, literature emerges as an ideal field in which to explore these emerging contradictions. As we have seen, the same reality is seen very differently by transhumanists and by critical posthumanists. What the former see as human enhancement, the latter see as further intensification of what is wrong with the human. While transhumanists see the fourth industrial revolution as empowering and human-centred, critical posthumanists champion instead the change of our anthropocentric viewpoints. Science fiction has engaged with these debates for centuries. According to Lisa Yaszek and Jason W. Ellis, through the 19th and early 20th century science fiction focused mainly on Enlightenment ideas of the human and the concept of unlimited perfectibility, exploring the idea of using the human being to create new species. After World War II, and as

a result of the advances in cognitive science and computational technologies, the limits of the human have been explored, namely the species' multiplicity, mutability, and nature. Science fiction and literature in general have the power to address the ethical concerns, dilemmas, possibilities, and dangers that can derive from the posthuman and cause in readers a more immediate and at times even emotional response. As Badmington suggests, in this type of fiction we see "the certainties of humanism fade and […] bodies, minds, desires, limits, knowledge, and being itself reimagined in ways for which traditional anthropocentrism cannot possibly account" (2011, 375). Literature also has the power to take abstract philosophical ideas and complex scientific and technological concepts and give them an embodiment in the form of narrative, resisting abstraction through its textual illustrations. As Hayles puts it:

> the literary texts do more than explore the cultural implications of scientific theories and technological artifacts. Embedding ideas and artifacts in the situated specificities of narrative, the literary texts give these ideas and artifacts a local habitation and a name through discursive formulations whose effects are specific to that textual body.
>
> (1999, 22)

The cultural, social, and representational implications of the posthuman and the fourth industrial revolution find an expressive outlet in the literary text.

5 Posthumanism and Transhumanism in Twenty-First Century Narrative

In the past few years, the connection between literary fiction and the posthuman has been explored from different perspectives in edited collections like Bruce Clarke and Manuela Rossini's *The Cambridge Companion to Literature and the Posthuman* (2017), which deals with different literary periods (from Medieval to Postmodern), literary modes (from science fiction to e-literature), and themes. The relationship between young adult literature and the posthuman has also been especially fruitful and has recently been studied in monographs and edited collections like Victoria Flanagan's *Technology and Identity in Young Adult Fiction: The Posthuman Subject* (2014), Anita Tarr and Donna R. White's *Posthumanism in Young Adult Fiction* (2018) and Jennifer Harrison's *Posthumanist Readings in Dystopian Young Adult Fiction: Negotiating the Nature/Culture Divide* (2019). The reflection of science and technology on literature has also been analyzed in volumes like Justin Omar Johnston's *Posthuman Capital and Biotechnology in Contemporary Novels* (2019) and Nina Engelhardt and Julia Hoydis's *Representations of Science in Twenty-First-Century Fiction: Human and Temporal Connectivities* (2019). Closer to a critical posthumanist perspective and from a theoretically informed and innovative perspective, we also

find Tony M. Vinci's *Ghost, Android, Animal: Trauma and Literature Beyond the Human* (2019) and Sanna Karkulehto, Aino-Kaisa Koistinen, and Essi Varis's *Reconfiguring Human, Nonhuman and Posthuman in Literature and Culture* (2019).

Posthumanism and Transhumanism in Twenty-First Century Narrative aims at studying the contradictions that emerge out of the transhumanist and critical posthumanist approaches to the changing concept of the human in the context of the fourth industrial revolution as seen in key novels written in the second decade of the 21st century by Dave Eggers, William Gibson, Tom McCarthy, Jeff VanderMeer, Don DeLillo, Margaret Atwood, Cixin Liu, and Helen Marshall. From a critical posthumanist perspective that questions anthropocentrism, human exceptionalism and the centrality of the 'human' subject in the era of the Anthropocene, the scholars in this collection analyze the aesthetic choices these authors make to depict the posthuman and its ethical consequences.

The collection opens with a more theory-oriented section, *Theoretical Approaches: Looking Back, Looking Ahead*, in which the past, present and future of humanity, posthumanism, and transhumanism are set in dialogue as the inherent contradictions of transhumanist discourses are exposed and the impact of digital literature is explored. In chapter 1, Stefan Herbrechter examines the current posthumanist climate in which the question of what it means to be human is being asked again with great urgency, in the context of new threats and fundamental technological and ecological change. For Herbrechter, posthumanism refers to the rush for ever smarter technologies that increasingly think with and for humans, but also to the ever more urgent discussion about climate change, extinction angst, exoplanets, biopolitics, and speciesism. In this context, his critical posthumanism is aimed at evaluating, contextualizing, and historicizing but also appreciating the resistance to the posthuman, post-humanisation, posthumanism, or posthumanity. In this vein, Herbrechter challenges posthumanist futurists and techno-utopians by foregrounding pre-figurations, genealogies and disavowals of the posthuman through a rereading of paleoanthropology and the notion of ancestrality. In chapter 2, Maite Escudero-Alías draws a theoretical analogy between the philosophy of Utilitarianism and Transhumanism in that both seek to improve human nature and to enhance the development of the self by means of technology, thus admittedly claiming a Nietzschean revaluation of values through scientific enquiry and of the disputing notions of "freedom" and "self-improvement." For this purpose, Escudero-Alías explores the notions of "sympathy" and "liberty" as exposed by liberal thinkers such as Adam Smith and John Stuart Mill. Her critical revision of Utilitarianism establishes a continuum between old disciplines of attention that gave way to enactments of sympathy deeply rooted in the environment and a current posthuman ethics that can open up more reparative paths of enquiry, and reclaim affective and attentive readings of literature. In chapter 3, Alexandra Glavanakova explores how the use of digital devices changes reading habits, affecting the plastic reading circuit and the cognitive modes involved

across a generational divide. Glavanakova takes up researchers' and educators' concern that these changes can hinder the development of the expert reading brain, thus affecting critical thinking, analytical skills, and the experience of empathy, and sets up to analyze what specific training and what strategies of reading need to be employed in order to foster the bi-literate brain—one equally conversant in both digital tabular reading and long-form linear reading. Thus, she argues for studying through distant reading methodology datasets of readers' contributions on social platforms for writing, which activate collective reading, and can involve collaborative meaning-making and critical evaluation of fiction in order to meet this goal.

Section II of this volume deals mainly with the contradictions and dark side of transhumanism and the dangers that it can bring. In chapter 4, Loredana Filip analyzes the ways in which biomedical and technological enhancement is presented in TED talks by leading transhumanists such as Nick Bostrom, Julian Savulescu, Natasha Vita-More, Ray Kurzweil, and Jason Sosa. Filip reveals the rhetorical and visual strategies that they use to make their discourses more persuasive via affective responses to images, videos, and statistics. She also shows the inherent contradictions of their discourse, which combines mystical feeling, scientific wonder, and confessional trust. In the TED talks that she has selected, Filip analyzes how the power of imagination, rational thinking, or the superiority of the mind is celebrated, at the same time as the aesthetic strategies that they use reveal the importance of feelings, the gut, or sense experiences and the significance of the body, which seems to undermine their own agenda. In chapter 5, Francisco Collado-Rodríguez provides an insightful analysis of two works that can seem very different at first sight: John Shirley and Gibson's *The Belonging Kind* (1986) and Eggers's *The Circle* (2013). Drawing from Wiener's notions on a new understanding of the human being, McLuhan's theories of self-amputation and social narcosis, and Bauman's concept of liquid modernity, Collado-Rodríguez analyzes both narratives as reflections of the limits and failures of transhuman discourse: enhancement can reach only the very rich, which can lead to the creation of an infrahuman species, and the transhuman conception of humans as information, which makes of them easy victims of mass media manipulation. Collado-Rodríguez shows how in Shirley and Gibson's short story and in Eggers' novel the mystical notion of the circle and the motif of the chase transform their meaning and point to human stagnation rather than human enhancement. In chapter 6, Margalida Massanet delves into our networked world of widespread techno-scientific development and inherent contradictions coming from the collision between the real and the digital, the present and the future, or humans and their future projections. In her analysis of Tom McCarthy's *Satin Island* (2015), Massanet reflects on these contradictions, the increasing importance of corporations in Western capitalist societies, and the dynamic role of literature to write the present and reformulate the future. U, the novel's main character, is conceived through the Deleuzian notion of the 'dividual,' a relational being with a networked

subjectivity who stems from the embrace of techno-scientific developments. Going beyond the novel itself, Massanet develops a theory of dividual affects to ignite change and micro and macro political agency over the globe and determine how literature can be a site for revolution but also evolution and progress.

Section III of the volume, *Transhumanism: Trauma and (Bio)Technology*, focuses on the role that trauma plays as response to the excesses of transhuman discourse as seen in Tom McCarthy's *C* (2010), Don DeLillo's *Zero K* (2016), and M. Night Shyamalan's film *Split* (2017). Susana Onega opens this Section in chapter 7 with an analysis of Tom McCarthy's third novel, *C* (2010), as an example of a conceptual novel in which, in the technological age, human beings are presented as necronauts—questers ready to undergo near-death experiences in order to explore the Underworld. Onega focuses on a double trauma: the one produced by the dehumanisation generated by the development communications technology that climaxed in the First World War; and the incest trauma that led to the suicide of the novel's main character's elder sister. Serge is deprived of any psychological depth, empathy, or capacity for affect, which naturalizes melancholia and challenges the traditional reliance on psychological realism of liberal humanism. For this reason, *C* can be considered an emblematic example of posthumanist fiction. In chapter 8, Carmen Laguarta-Bueno intertwines some of trauma theory's main tenets and transhumanist concerns with overcoming death in her analysis of DeLillo's 2016 novel *Zero K*. The novel's starting point is the wish of the main character's father to undergo early cryopreservation, aiming at overcoming death in the future by dying in the present and leaving behind his embodied existence, intimate relationships, and his problems and responsibilities. Laguarta-Bueno reads DeLillo's novel as a narrative of trauma that uses strategies such as a minimalist style of narration, flashbacks, repetitions, or intrusive images to question the disembodiment and dehumanization inherent in the idea of suspending our present lives. The novel addresses the complex ethical dilemma that emerges from early cryopreservation and reinforces the need to learn to cope with our responsibilities and accept illness and death as integral parts of being human. Chapter 9 closes Section III with Miriam Fernández-Santiago's analysis of M. Night Shyamalan's film *Split* (2017). Drawing from both posthuman and disability studies, Fernández-Santiago questions the utopian visions of transhuman enhancement and denounces the movement's demand for the individual right of self-determining (often prosthetic) embodiment, which turns the merely organic human into a disabled body that lacks something that the prosthetic transhuman embodiment has. Therefore, transhumanism displaces disability towards the organic human, who, losing humanist supremacy, fails to adjust to the new cyborganic norm. According to Fernández-Santiago, M. Night Shyamalan's *Split* (2016) blends trauma, disability, and transhumanist discourses in the film's presentation of a dystopian vision of transhumanity, in which the label of mental disability is inflicted on a human identity that is fragmentary and dysfunctional. This reveals in the end

the violent, savage drive in transhumanist evolutionary logic as it also turns into an allegory of the causes, discourses, and policies following the USA's national trauma of 9/11.

The final Section of the collection, *Posthumanity: Post-Anthropocentric Scenarios*, explores the qualities of the (post)human in a variety of dystopian futures marked by the planetary influence of human action. Thus, in chapter 10 Justus Poetzsch contextualizes the notion 'Anthropocene' to later focus on narratives concerning the techno-ecological transformations of the planet, which try to redefine mankind's place and relevance in light of the new reactive and relational earth, climate and environmental others. Poetzsch suggests that in Liu's space saga, transhuman enhancement is put forward as the ideal solution to regain power and re-establish the human dominance in an exponentially accelerating and vastly growing reality, while VanderMeer presents posthuman perspectives that identify human exceptionalism and anthropocentrism as the original problem that caused planetary disruptions in the first place, pleading for an embedded, embodied and entangled narration of our world. In chapter 11, Monica Sousa considers how VanderMeer's biotech postapocalyptic novel *Borne* (2017) explores ideas of posthumanist empathy towards animals created through biotechnology. *Borne* follows a scavenger, Rachel, in the ruins of a nameless future city who finds Borne, an enigmatic hyper-advanced genetically produced organism, whose body and mental capabilities rapidly evolve, resulting in Rachel blurring the boundaries between plant, animal, and person. While *Borne* invites readers to consider how biotechnology can have dire consequences and to consider the implications and consequences of creating genetically modified animals, a larger focus of Sousa's chapter is to consider human responsibility towards these creations once they have been created, exploring posthumanist empathy in the novel, and further concerns about the notion of personhood. In chapter 12, Esther Muñoz-González scrutinizes whether *MaddAddam*, the last novel of Atwood's homonymous trilogy, with its palindromic title that evokes circularity, proposes the eternal return of the same or a hopeful "repetition that saves." Muñoz-González shows that it is only when the human survivors learn that Craker/human reproductive abilities are still possible and both groups start to share memories and culture that the bonds between the posthuman and the human are established. 'Posthuman motherhood' is approached both as a spiritual motherhood exemplified by Toby's mentoring of a Craker child and as biological motherhood: the birth of the hybrid offspring of women and Crakers. While the newborns represent the source of hope in the novel through miscegenation, *MaddAddam* is exposed as a hetero-patriarchal society in an apparent gender backlash. The section closes with chapter 13, where Vint argues that Marshall's *The Migration* provides a vision of posthuman subjectivity that suggests that humans must change themselves in order to thrive on a planet changed by climate change. The novel's metaphor of evolutionary mutation offers a figuration of a materially transformed human body

that demonstrates how humanity is interdependent with its environment, including our planetary climate. Marshall presents this posthuman as an entity that can survive only if we find the capacity to see the potentiality for life in what we deem to be lifeless—an orientation that the novel proposes we take toward the ecosystems around us as well as to the posthuman bodies that are transformed rather than killed by diseases in the novel. Vint eloquently proposes that Marshall's posthuman is a vision of mutuality and symbiosis, which is consistent with Haraway's thinking on trans-species community.

Notes

1 According to Vint, "Western culture remains attached to a concept of self as dis-embodied, a concept of self that has important consequences for how we understand the relation-ship between humans and the rest of the material world" (2007, 6–7).
2 Grosz's approach can be aligned with Karen Barad's new materialist notion of agential intra-action, which remarks the inseparability of nature and culture in the material-discursive practices whereby subjectivity is sedimented (2003, 822–823). Or, to put it in Vint's words: "subjectivity is as much material as it is abstract, about the body as well as about the mind, and subjectivity is shaped by cultural forces that produce the sense of an interior" (2007, 8).
3 A more radical version of this idea is put forth by Patricia MacCormack, whose *Posthuman Ethics* (2012) proposes human extinction as the requisite for the survival of Planet Earth.

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Notes

Introduction

1 According to Vint, "Western culture remains attached to a concept of self as dis-embodied, a concept of self that has important consequences for how we understand the relation-ship between humans and the rest of the material world" (2007, 6–7).
2 Grosz's approach can be aligned with Karen Barad's new materialist notion of agential intra-action, which remarks the inseparability of nature and culture in the material-discursive practices whereby subjectivity is sedimented (2003, 822–823). Or, to put it in Vint's words: "subjectivity is as much material as it is abstract, about the body as well as about the mind, and subjectivity is shaped by cultural forces that produce the sense of an interior" (2007, 8).
3 A more radical version of this idea is put forth by Patricia MacCormack, whose *Posthuman Ethics* (2012) proposes human extinction as the requisite for the survival of Planet Earth.

Chapter 2

1 As Mr Gradgrind commands to the children in Coketown's classroom: "But you mustn't fancy. You are never to fancy. You are to be in all things regulated and governed by facts" (Dickens, 2006, 6).
2 Tomkins distinguishes between positive affects (interest-excitement, enjoyment-joy), negative affects (distress-anguish, fear-terror, shame-humiliation, contempt-disgust and anger-rage), and resetting affects like surprise-startle, which can neutralize the negative force of harmful affects. In his own words: "affects may be invested in other affects, combine with other affects, intensify or modulate them, and supress or reduce them. In marked contrast to the separateness of each drive, the emotions readily enter into combinations with each other and readily control one another" (1995, 56).
3 Raymond Williams argues that during this time, "nearly four thousand Acts, more than six million acres of land were appropriated mainly by the politically dominant landowners: about a quarter of all cultivated acreage" (1973, 96).
4 For a thorough examination of the concept of the Sublime throughout history and literature, see Philip Shaw's *The Sublime* (2006).
5 In her essay "Recollections of Ilfracombe" (1856), Eliot recalls the delight in observing seaweeds and sea anemones as creatures that captivated the Victorian imagination while inspiring a discourse of interconnectedness of all life forms.

6 For a discussion on how the myth of technological progress has been built upon racist and misogynist paradigms, see Dinerstein's "Technology and Its Discontents: On the Verge of the Posthuman" (2006).

7 In 1899 the economist and sociologist Thorstein Veblen coined the term 'conspicuous consumption' in 1899 to describe the families of the upper class that exhibited their prominent wealth by displaying in public their social and economic prestige. In the 19th century, this term was also applied to the new rich social class that emerged from the industrial revolution, highlighting a new behavioural condition induced by consumerism and the sole desire for immediate gratification and hedonism. Since then, the habit of conspicuous consumption has rapidly spread as a global practice among most social backgrounds. Unquestionably, technology has contributed to such homogeneity in our customs and values.

Chapter 3

1 For more on this distinction see Alexandra Glavanakova, *Posthuman Transformations: Bodies and Texts in Cyberspace* (Sofia: Sofia University Press, 2014).

2 See Stanislas Dehaene, *Reading in the Brain. The New Science of How We Read* (New York, NY: Penguin, 2009).

3 For more on this interconnection see Hayles and Pressman, 2013; Wolf, 2016, 2018.

4 For more on this, see Elaine Treharne and Claude Willan, *Text Technologies. A History* (Stanford, CA: Stanford University Press, 2020); Lori Emerson, *Reading Writing Interfaces: From the Digital to the Bookbound* (Minneapolis, MN: University of Minnesota Press, 2014); Keith Houston, *The Book. A Cover-to-Cover Exploration of the Most Powerful Object of Our Times* (New York, NY: Norton, 2016).

5 The evolution of electronic literature see be traced through the three-volume anthology compiled by the Electronic Literature Organization: https://collection.eliterature.org.

6 Some of the most acclaimed texts of experimentation in print inspired and made possible by digital technology: Mark Danielewski, *House of Leaves* (2000), *Only Revolutions* (2006); Salvatore Plascencia's *People of Paper* (2005); Michael Joyce's novel *WAS: annals nomadique/a novel of internet* (2007); Jonathan Safran Foer's *Extremely Loud and Incredibly Close* (2005), *Tree of Codes* (2010); *S*, written by Doug Dorst and conceived by Jeffrey Jacob Abrams (2013).

7 www.whalingmuseum.org/programs/annual-events/annual-moby-dick-marathon.

8 http://commons.digitalthoreau.org.

9 See, for example the Slow Movement webpage: https://www.slowmovement.com/slow_books.php; John Miedema, *Slow Reading* (Sacramento, CA: Litwin Books, 2009).

10 The data is from the most recent survey carried out among 5,294 participants from 199 schools in Bulgaria, OECD, Bulgaria, student performance, PISA 2018, conducted every three years since 2000. http://gpseducation.oecd.org/CountryProfile?primaryCountry=BGR&treshold=10&topic=PI

11 See McNeish et al., 2012; Kurata et al., 2017.

12 A strong argument for the phenomenological psychology of reading can be found in Andrew Piper, *Book Was There: Reading in Electronic Times* (Chicago, IL: University of Chicago Press, 2013).

13 An online group dedicated to the reading of David Foster Wallace's difficult and profound novel *Infinite Jest* in the summer of the writer's passing http://infinitesummer.org. The challenge set was "to join endurance bibliophiles from around the world in reading Infinite Jest over the summer of 2009, June 21st to September 22nd. A thousand pages ÷ 92 days = 75 pages a week."

14 This comprises a large online reading group, assembled through Twitter and message boards, devoted to discussing William Gaddis's *J R*. www.leekonstantinou.com/2012/06/15/occupygaddis-begins.

15 #1book140 https://twitter.com/search?q=%231book140&src=hash

16 A multimedia publishing platform: https://atavist.com/

17 A free book discussion group: https://www.booktalk.org/home.html.

18 www.litlovers.com/getting-started.

19 https://onlinebookclub.org.

20 A cataloging and social networking site for book lovers: www.librarything.com.

21 BiblioTech was the first, public library founded in 2013 in San Antonio, Texas; Do Space in Omaha, Nebraska (2015), alongside university libraries at Kansas State University (2000), Stanford University (2009), the University of Texas at San Antonio Applied Engineering and Technology library (2010), the Florida Polytechnic University in Lakeland (2014). Europeana, Europe's multimedia online library, opened in November 2008: www.europeana.eu/portal/en. The Bulgarian National Library has spearheaded similar projects on a local level: digitizing and preserving the written legacy of Bulgaria, www.nationallibrary.bg/wp/?page_id=4119&lang=bg, and by university libraries as well, including the Sofia University Library.

22 www.swoonreads.com.

23 The data was published on the company's website as of October 2019, https://company.wattpad.com/press.

24 E. L. James's *Fifty Shades of Grey* (2011) started out as fan fiction on a rival site FanFiction.net, which was launched in 1998 and is still operational. Similarly, the After series by amateur writer Anna Todd has been read more than 1.5 billion times on Wattpad since it was first posted there in 2013. It is now a bestselling book series, with millions of copies sold after Wattpad negotiated a deal with the publishing house Simon & Schuster.

25 See Melanie Ramdarshan Bold, 2016; Simone Rebora and Frederico Pianzola, 2018.

Chapter 8

1 The Convergence's life extension technologies help this character to overcome her fear of death or, to use trauma theorist Dominick LaCapra's words, her structural trauma. In his 1999 work "Trauma, Absence, Loss," LaCapra establishes a difference between historical trauma, which is related to a feeling of loss usually derived from a specific traumatic event, and structural trauma, which he connects to an absence or "a gap in existence" not necessarily "reduced to a dated historical event or derived from one" (727). Regarding structural trauma, Collado-Rodríguez argues that, for LaCapra, this type of trauma "results from the realization of the intrinsic mortality of the human condition" (2012, 47).

2 French psychologist Pierre Janet was a pioneer in the study of the phenomenon of dissociation (1973; 1984). Two other important contributors to the explanation of this phenomenon are psychiatrist Bessel A. van der Kolk and psychologist Onno van der Hart (1995).

3 Luckhurst regards Toni Morrison's *Beloved* (1987) as a "formative text in literary trauma studies," as it helped establish some of the "basic narrative and tropological conventions of trauma fiction" (2013, 90), but also mentions other texts by writers such as Margaret Atwood, Pat Barker, Anne Michaels, Benjamin Wilkomirski and W. G. Sebald which show similar narrative patterns.

4 The concepts of acting out and working through were first introduced by Sigmund Freud in his 1914 essay "Remembering, Repeating and Working-Through."

5 This seems to take Jeffrey back to his first journey to the Convergence and, more specifically, to the moment when, just after shaving his beard—a beard that he seemed to have grown for the occasion—his father first announced that he was planning to undergo cryopreservation.

6 As opposed to those critics who argue that trauma is something that cannot be fully grasped or remembered (see Caruth, 1995, 4; van der Kolk and van der Hart, 1995, 160; Bloom, 2010, 200–204), recent psychological research suggests that, after a traumatic event, memory is enhanced rather than undercut. Thus, trauma victims might be able to provide detailed accounts of their experiences (see McNally, 2003, 62; Pederson, 2014, 333–340).

Chapter 9

1 It has been argued that rather than confronting humanism, transhumanism is a continuation of the humanist ideals (Ferrando, 2013, 27; Clarke and Rossini, 2017, xiv; Vint, 2007, 178), including not only anthropocentrism (replacing the theocentric model) and human supremacy over other species, but also its humanist democratic correspondent.

2 The constructivist paradigm underlying the prosthetic and eugenic branches of transhumanism subscribes to a multiple identity politics that is sometimes represented by the physical image of the articulated/prosthetic cyborg (Haraway, developing the medical idea of La Mettrie's "Man Machine"), the global information network of Singularity (Kurtzweil, 2005), the flickering or fluid material identities of different forms of social or gender mobility (related to Hayles's code switching versus Cixous's Marxist appropriation), and on recent findings in neuroplasticity (Deppermann et al., 2014, 172–173), or the eugenic projects uncannily blending the Aryan version of Nietzsche's Übermensch, Fanon's utopia of cosmopolitan hybridity, and the normative, homogenizing control of human genetic production by multinational corporations such as Monsanto. These many forms of the transhumanist political promise involving the evolution of gender, race, class, or species identity are all based on the programmed obsolescence (Diéguez, 2017, 93–94; Vint, 2007, 177) of the human species through the deconstruction of the humanist discourse.

3 According to the social model of disability, "impairment" is defined as a functional (mental or physical) limitation, while "disability" is a "socially generated system of discrimination" (Meekosha and Shuttleworth, 2017, 177).

4 *Split* is the second movie in a trilogy also including *Unbreakable* (2000) and *Glass* (2019).

5 Like the transhuman self, The Beast's identity is ambiguous under the humanist paradigm. Although It is embodied as an independent individual, It does not operate (like other embodied personalities previously did) as the political representative of Kevin's split mind, but as its composite evolved self that embodies their diversity. The Beast would also qualify as merely instrumental, discursive prosthesis if considered as a mythical construct developed by Kevin's split mind, but Its embodiment is represented as natural in Vitruvian terms (a superVitruvian man), while Its partial nakedness and cannibalistic practices suggest a certain sense of animality in It. Short of a better pronoun, I chose the capitalized "It" to refer to this transhuman ambiguity between the human, the animal and the instrumental object.

6 All italics are mine.

7 While discussing the 9/11 attacks in 2002, Pfeiffer compares US imperial ontology with ableist ontology in that both are based on "false dichotomies" and the exclusion of otherness as an expression of manifest destiny (Pfeiffer 2002, 18).

Chapter 10

1 Especially Yefremov's *The Bull's Hour* (1968) and Strugatzkis's multiple stories situated in their *Noon Universe* are depicting a technologically and politically advanced spacefaring humanity that spreads peace and freedom throughout the cosmos but always struggles with the linear laws of historical materialism.

2 This holds not for the entirety of the trilogy, as love and solidarity of the few and remaining intelligent entities are offering at least the minimal chance of a utopian rebirth but stand almost no chance against the looming dark forest principles.

3 "My sole gift or talent, I believe now, was that places could impress themselves upon me, and I could become a part of them with ease. Even a bar was a kind of ecosystem." (VanderMeer, 2014, 73) See also "situated knowledges" (Haraway, 1988) and "apparatus" (Barad, 2003) for post-dualistic, performative scientific knowledge production.

Chapter 11

1 The term "Frankenstein Complex" is derived from the title character Victor Frankenstein from Mary Shelley's *Frankenstein* or *The Modern Prometheus* (1918). Victor fears that his "monstrous" creation will turn on him and the rest of humanity.

2 Alba was produced by Kac in collaboration with French geneticist Louis-Marie Houdebine, who uses a GFP gene found in a jellyfish (*aequorea victoria*) that fluoresces green when exposed to blue light. This protein is often used in standard biological experiments that involve fluorescence. When Alba was exposed to this light, she would glow green.

Chapter 12

1 Violent convicts in the pre-pandemic time. They were forced to fight each other to death and as a result they became dehumanized to a reptilian level.

2 Laboratory group that was apparently dedicated to the profitable business of creating "babies à la carte," customizing DNA information for the prospective parents. However, it was the test field for Crake's secret project: to design and develop the new race, the Crakers.

3 Carretero-González uses Haraway's phrase "becoming with" (2008, 17), as a combination of Levina's ethics of alterity—firmly based on the recognition of the other ethical status after the human face to face encounter—and Deleuze and Guattari's concept of "becoming animal"—we humans are ethical only when we overcome the repulsion produced when the face of the other is perceived as different in any aspect. "Become with" is used then "to discern the epistemological position required to grant the Creature [Frankenstein's monster] the ethical status it deserves" (2016, 62). In this way, becoming with other-than-human "will be looking at the world in the post-dualistic, post-hierarchical, post-human terms" (2016, 63).

4 Carretero-González acknowledges in *Frankenstein* the coexistence between trans-human and posthuman discourses. While Victor Frankenstein initially departs from a transhumanist desire to enhance human race through technology, the result he obtains is an other-than-human, a new species that he sees as monstrous post-human, a "catastrophe" (2016, 55–58).

5 Isolated artificial environment where the Crakers were born and raised before the pandemic. The name "Paradice," a witty modification of the biblical "Paradise," plays with the idea of indeterminism and uncertainty. When Einstein studied the behavior of the quantum particle, he involuntarily opened room for two different interpretations of the universe. In Einstein's view "God does not play dice with the Universe," that is, he believed in Spinoza's formulation of God, indistinguishable

from nature, determinist and strictly following the lawful principles of cause and effect. In sum, a Good who did not leave room for free will. In contrast, Danish physicist Niels Bohr claimed that "it is wrong to think that the task of physics is to find out how nature is. Physics concern what we can say about nature" (Baggot, 2019, n.p.) However, Einstein could not accept Bohr's interpretation that brought "indeterminism and uncertainty, with effects that can't be entirely and unambiguously predicted from their causes" (Baggot, 2019, n.p.). The debate is still unresolved, and it seems that Crake chooses the name of the project as a further demonstration of his hubris, as he takes both God's and Einstein's side in the debate.

6 Toby is one of the few woman survivors, a former high rank member of the God's Gardeners—a deep ecologist religious group—and main focalizer in *MaddAddam*.

7 This state of numbness is, according to McLuhan, a reaction of self-defense of the body or the mind when it cannot locate or avoid the cause of discomfort and a way to confront the physical and psychic trauma and to endure the pain of the situation (1994, 41–45).

Chapter 13

1 Haraway is also responding here to Derrida's interview, entitled "Eating Well," in which he discusses how the human/animal boundary—and thus carnivorism or eating of the nonhuman—has been a philosophical foundation of Western subjectivity. This is part of why she glosses incorporation as eating.

2 One of the main interventions of Squier's book is to analyze how this promise of plasticity has often been undermined by directions the field itself has taken, which reinforce determinism. She thus calls upon feminist STS scholars to "learn about epigenetics so we are able to contest the way the field has been and is being redirected and narrowed in scientific research and medical practice; that we should do so to recapture the potential of the epigenetic landscape as a methodological prompt crafted at the intersection of art and science that can, when used creatively, amplify the options we have for exploring the complex network of interactions that is biological development" (Squier, 2017, 207). This feminist vision of the possibility of epigenetics is what Marshall evokes in her novel.

3 Sophie also encounters a countercultural version of similar ideas in the mother of her best friend in Toronto, Jaina: "She loved crystals, burning sage and incense, ley lines and Ouija boards. 'Every part of the world touches every other part,' she used to tell us, clad in a long, loose-fitting skirt redolent of sandalwood. When Jaina and I were alone we'd laugh about it but we let her read our fortunes. 'The gentle wind roams the earth. The superior person expands her sphere of influence as she expands her awareness,' she would intone'" (Marshall, 2019, 22).

4 I argue this point about the figurations of new posthuman embodiments in science fiction as arguments for a new philosophical and ethical way to conceptualize and thus live a "proper" human identity in *Bodies of Tomorrow*—a formation I call "ethical posthumanism" in that work (Vint, 2007).

5 See Haraway's "Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin" (2015) for an analysis of this problem of naming. She also takes up these questions in her *Staying With the Trouble* (2016).

6 It is beyond the scope of this chapter to explore these ideas in detail, but Roberto Esposito's philosophical oeuvre is devoted to this project of developing a new immunity theory of politics that understands the immune system as negotiating rather than destroying difference, which is consistent with current biomedical research. Fishel draws on his work as well as on biomedical sources. See especially Esposito's *A Philosophy for Europe* for an analysis of how we must understand the return of nationalist and racist authoritarian politics as part of an auto-immune disorder of the contemporary biopolitical paradigm (2018).

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