

Under Surveillance: Genetic Privacy in Margaret Atwood’s *MaddAddam Trilogy*

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Abstract

This paper provides the first study of the depiction of genetic privacy in Margaret Atwood’s *MaddAddam* trilogy, which comprises the novels *Oryx and Crake* (2003), *The Year of the Flood* (2009) and *MaddAddam* (2013). The concept of genetic privacy responds to the growing volumes of individual genetic data at risk of public exposure today and designates a recent informational turn in thinking about the boundaries of private and public spheres. Atwood’s trilogy registers this shift in conceptions of privacy from the concealment of information to the control of the use of personal data. In the novels’ pervasive surveillance culture, lacking control over genetic information limits individual agency and shows that when privacy is threatened, a fundamental concept of modernity is at stake. Besides representing a new development in Atwood’s long-standing concern with the politics of privacy, the trilogy’s exploration of genetic privacy highlights that the novel continues to be a central and socially relevant site for the discussion of the private.

Margaret Atwood’s *MaddAddam* trilogy, comprising the novels *Oryx and Crake* (2003), *The Year of the Flood* (2009) and *MaddAddam* (2013), has emerged as a central text in literary as well as social and ethical discussions of contemporary genetics. A growing body of critical analysis has engaged with genetic science in Atwood’s trilogy and emphasized the novels’ warning against its abuses by an unscrupulous capitalist system.¹ The trilogy foregrounds genetics in numerous ways: the storyworld is populated with a variety of genetically spliced plants and animals, ranging from chimeras like the ferocious and intelligent pigoons (a human-pig mixture) to genetically modified Happicuppa coffee beans and to an entirely new humanoid species, the Crakers. These genetic organisms imaginatively evoke today’s ethical and political debates around environmental concerns about GM foods and fears about tinkering with nature. The prominent status of Atwood’s trilogy in such debates exemplifies two significant developments: first, a growing engagement in contemporary literature with scientific and bioethical subjects and, second, an increasing interest on the part of bioethics and science policy scholars in the role of fiction in shaping and reflecting public attitudes towards science. The wealth of existing bioethical readings of the trilogy is ample evidence of both these trends (Adami; Pusch; Zwart).

There are multiple reasons for the prominence in bioethical discussions of works like Atwood’s. Not only, as bioethicist Sarah Chan observes, do the disciplines of bioethics and literary studies increasingly share research interests. Bioethicists have also come to recognize the affordances of novels and films to register and impact cultural attitudes towards biomedical issues, as well as to explore and generally raise public awareness of these issues and their ethical ramifications through hypothetical scenarios and thought experiments (Chan 398). Neither literary scholars nor bioethicists, however, have attended to the trilogy’s complex treatment of genetic privacy, that is, an individual’s power to control the use of their genetic information.

The topic is a central concern in current bioethical and political debates, and its centrality in these areas helps foreground this theme as a crucial but underexplored aspect of Atwood's trilogy. Foregrounding Atwood's exploration of genetic privacy can, in turn, highlight how literary analysis contributes to a transdisciplinary dialogue about bioethics and science policy. So far, as Jay Clayton points out, literary scholars have been "largely absent" from bioethical negotiations and policy-making processes even though they are uniquely equipped to draw out the complex ethical perspectives registered by the literature (Clayton 570). The transdisciplinary effort underlying my analysis of Atwood's trilogy integrates a close reading approach to literary representations of privacy with current research concerns from sociology, law and public policy about the socio-political impact of changing conceptions of the private. Drawing on understandings of the emerging concept of genetic privacy from these latter disciplines helps to identify the trilogy's particular contribution to the literary history of privacy but also, importantly, to conversations about genetic privacy in bioethics and science policy forums.

The concept of genetic privacy articulates specific ethical and socio-political concerns about the uses of genetic information. Literary fiction's multiperspectival complexity is a rich medium through which to examine these concerns, as Atwood's *MaddAddam* trilogy powerfully demonstrates. The trilogy imagines a dystopian scenario in which genetic privacy is drastically curtailed by a pervasive, corporate-run surveillance system that entails an anti-democratic commodification of personal data, evoking Shoshana Zuboff's notion of "surveillance capitalism" (Zuboff 75). The novels attest that genetics has become deeply entwined with notions of privacy and agency, and that these fundamental concepts of modernity are at risk under corporate capitalism. What is more, the trilogy's exploration of genetic privacy not only constitutes a new development in Atwood's career-long interest in the political interrelations of public and private spheres but, by registering a shift in the concept of privacy, gives new life and social relevance to the historical tradition of the novel as a central site for the investigation and critique of conceptions of the private.

Genetic Privacy: Definition and Context

The notion of privacy is a central if protean category of modernity. In her comprehensive historical study of privacy in the modern world, Sarah Igo traces how the meaning of privacy has shifted in response to changing social contexts, evincing privacy's intimate entanglement with such fundamental concepts to Western society as personal and national identity, autonomy, freedom and happiness (Igo, *Citizen*).² Marking a new phase in the history of privacy, the concept of genetic privacy reflects a contemporary informational turn in thinking about the boundaries of private and public spheres. Genetic privacy has gained currency as an acute social problem in the wake of a dramatic multiplication of genetic data as genetic testing technologies have become increasingly affordable and widespread. These data are no longer only compiled by clinical or academic research institutions but also by private corporations, especially in the genealogy market by firms such as 23andMe or AncestryDNA. As the volume of data grows and its production contexts diversify, while its economic role remains opaque, so grows the uncertainty about how this information might be (mis)used, particularly should it become public, either by voluntary disclosure, security breaches, or commercial repurposing. Because genetics is widely believed to offer fundamental insights into a person's health and identity, the risk of improper uses of genetic information is often viewed as especially consequential. The stakes are therefore perceived to be particularly high when an individual's genetic privacy is threatened.

The particular issues raised by genetic privacy are implicated in larger social transformations of privacy, most notably due to the rise of big data. To define exactly the mass-mining of data the term identifies has proven difficult, Zuboff argues, precisely because it is part of a large-scale social formulation of a "new logic of accumulation" with substantial consequences for democracy and citizenship (Zuboff 75). The big data economy thrives on the collection of personal information resulting in what Igo describes as the "unparalleled privacy crisis" marking the present moment (Igo, "Beginnings" 18). This crisis of the private manifests itself in the "twin worries about surveillance by powerful organizations and the 'self-surveillance' of individual citizens" who willingly part with their information, be it on Facebook or Ancestry.com (Igo, "Beginnings" 18). While suspicion of Orwellian over-extended state-surveillance has foregrounded anxiety about protecting privacy since the emergence of the surveillance society from the mid-1960s onwards, the introduction into the surveillance landscape of private corporations and a growing body of people who voluntarily part with private data has critically redefined the urgency of the problem.

The new vulnerability of privacy arising from abuses of big data also exacerbate existing social and economic inequalities. Mary Madden has pointed out that low-income groups and minorities are disproportionately at risk from privacy harms occasioned by big data, such as identity theft, credit card hacking and discrimination based on sensitive information like medical records. On top of the digital inequality, low-income groups and minorities are also more often subject to digital surveillance (Madden). This reality is reflected in Atwood's trilogy in the precarious world outside of the corporate compounds, the so-called "pleeblands", where surveillance and biomedical experiments turn populations into "targets of data extraction" (Zuboff 86).

From a legal perspective, big data has already effected a shift in the conception of privacy. The right to privacy was first formulated by Samuel D. Warren and Louis D. Brandeis in 1890. Indicating an early cross-disciplinary pollination, Warren and Brandeis, as David Rosen and Aaron Santesso show, were informed by literary, especially Romantic notions of the significance of private spaces – both literal and metaphorical – for the development of one's individuality (Rosen and Santesso 3-4). Warren and Brandeis's famous formulation of privacy as the "right to be let alone" (Warren and Brandeis 193) has shifted in the contemporary context to "privacy as a personal right to control the use of one's data" (Schwartz 820).

While this shift in the concept of privacy is central for the information-based conception of genetic privacy, earlier notions still reverberate in public understandings of the term. In their systematic literature review of individuals' concerns over genetic privacy, Ellen W. Clayton et al. state that the concept ranges in meaning from denominating solitude, as in the right to be "let alone", to anonymity, to confidentiality, to control (Clayton et al. 2). These different meanings respectively evoke different socio-political concerns connected with a possible infringement of genetic privacy, also dependent on whether the genetic data were generated in clinical settings or through direct-to-consumer genetic testing offered by private companies. Risks associated with the abuse of such data include discrimination by employers, insurers and the government or simply "being known" and identifiable in contexts where a person may wish to remain anonymous (Clayton et al. 5-10). While the different meanings of genetic privacy open up diverse avenues for research, I will focus in the present study on the concept of genetic privacy as it relates to matters of control of individual genetic data because this is the issue most prominently explored in the *MaddAddam* trilogy.

Finally, genetic privacy is intimately tied up with new forms of digital citizenship and subjectivity, which the trilogy also explores. Atossa A. Abrahamian

argues that recent EU legislation, in its attempt to protect individuals' privacy online, engenders a new, de-territorialized form of data citizenship (Abrahamian). And Igo cites Julie E. Cohen's theory of a "networked self" as an even more radical mode of reframing privacy and selfhood in the age of big data (Igo, *Citizen* 361). This illustrates that digital data, including genetic information, drive newly emerging modes of personal, social and political connections that redefine what privacy means in the twenty-first century. Atwood's trilogy registers the shift in the emphasis of privacy from concealment to control through the limits of characters' control of their genetic data. What is at stake in this deliberation is the modern conception of personal liberty and agency which is closely bound up with the concept of privacy. This modern configuration of privacy developed, as the following section will demonstrate, in tandem and dialogue with the modern novel.

Privacy, Atwood and the Novel

The trilogy's exploration of genetic privacy is embedded in an aesthetic configuration of private and public spheres that reinvigorates a history of articulating privacy in the novel as a literary form. Jürgen Habermas, Michael McKeon, Patricia Spacks and others have argued that the novel as a genre was significantly shaped by considerations of privacy and, in turn, shaped the course of modern understandings of the concept. Habermas famously located the preconditions for the emergence of a politically relevant public sphere within the privacy of the nascent eighteenth-century domestic novel (Habermas 51). Habermas argued that a politically significant public sphere defined by active engagement in public critique emerged from a culture of literary criticism as practiced by members of the middle classes in the eighteenth century who had honed their critical skills in the privacy of their homes. The form of subjectivity required by the public critic was brought about, according to Habermas, by architectural changes to domestic spaces, the new economic autonomy of the middle classes and the novel whose metaphorical space allowed the individual an exploration of their own interiority. The psychological reflection afforded by the novel form, in conjunction with private space and monetary freedom, established privacy as a distinctly modern phenomenon and the precondition for the rational, liberal humanist individual characteristic of modern democracy and liberal capitalism (Habermas cf. Part II). More recently, Michael McKeon has similarly investigated privacy as a particular epistemic constellation that emerged in its current set of meanings during the modernizing processes of the sixteenth, seventeenth and eighteenth centuries. In *The Secret History of Domesticity*, McKeon, like Habermas, discusses material and conceptual conditions for the emergence of privacy; he references, for example, changes in architecture and notions of selfhood. One of McKeon's central claims is that the novel, especially the eighteenth-century domestic novel, exhibits a particular sensitivity to the changing conceptions and realities of privacy and domestic space in modernity. The forces that bring into being the concept of privacy also bring into being the genre of the domestic novel and the novel is able to reflect on the social changes that the transformations of the private entail. Patricia Spacks, in *Privacy: Concealing the Eighteenth-Century Self*, elaborates on Habermas's argument about the novel's place in the development of privacy by extending it to include an analysis of how the concept of privacy came to shape representations of interiority in eighteenth-century literature, predominantly in novels. Spacks argues that "the developing novel of the eighteenth century helped to consolidate as well as to explore the notion of an inner life", adding that a belief "in that inner life's reality and importance necessarily led to its cultivation; hence, to a perceived need for privacy" (Spacks 227). Spacks, however, rightly cautions that there

is no straightforward relation between modern notions of privacy and the equally modern separation of public and private – private domestic spaces do not for instance guarantee individual privacy (Spacks 3-4).

Space, especially domestic space, features prominently in conceptions of privacy and, significantly, also in aesthetic representations and critiques of privacy in the novel. As McKeon states: "the public and the private have been fruitfully susceptible to representation through spatial metaphor and its cardinal differentials outside/inside and high/low" (McKeon xxi). Beyond metaphors of space, McKeon also attends to literal spaces in his discussion of architecture and to representations of spaces in painting and literature. McKeon points to Aphra Behn's *Love-Letters* as an example where a threat to privacy is depicted and foregrounded through characters' movement through domestic space; and to Jane Austen's *Pride and Prejudice* for the way in which, in the domestic novel, the interior privacy of characters "often is disclosed in complex association with that of houses" (McKeon 577, 710). Spacks, while also describing physical spaces in the novels she investigates, is overall less concerned with the literal spaces of privacy but with the cognitive spaces affording private interiority. Victoria Rosner extends McKeon and Spacks's arguments about privacy and space in the eighteenth-century novel by showing how "the spaces of private life are a generative site for literary modernism" (Rosner 13). In scholarly debates on literature and privacy, space thus features as physical, imagined and metaphorical space.

As Robert T. Tally Jr. points out, these different levels of space have also been emphasized by recent scholarship on literature and space occasioned by the so-called "spatial turn" in literary and cultural studies (Tally 2-3). The category of space becomes especially significant for discussions of privacy when social space is understood as an "active force in shaping human societies" (Thacker 30). Highlighting private spaces as social spaces underlines the importance of spatial representations of privacy in literary texts. Andrew Thacker's claim that social spaces shape literary forms seems immediately convincing in light of McKeon's argument about the emergence of the domestic novel out of, at least in part, the changed architecture of people's homes (Thacker 34). In a similar vein, the emerging field of Literature and Architecture foregrounds space as shaped by and productive of political power dynamics and holds that literature is able to draw attention to this (Charley).

The privacy invasions in the *MaddAddam* novels that ensue from their pervasive surveillance culture are bound up with depictions of space: cameras invade the literal spaces of schools and private homes just as online surveillance tracks activities in the virtual space of the internet. Significantly, the trilogy adds another layer to this spatial matrix as invasions of literal spaces metaphorically come to stand in for invasions of genetic privacy. This constitutes a formally innovative way in which the novels give shape to genetic data, an abstract entity which, while referencing the physical DNA that has been sequenced using material scientific methods, otherwise exists as an intangible object. As control over space in the text becomes expressive of control over genetic data, genetic privacy emerges as intricately tied up with the limits of individual agency in the public sphere.

Private spaces in Atwood's trilogy are not severed from the public sphere but maintain a number of ties to their conceptual other. More specifically, political dynamics in private often reflect those of the public, which is why the domestic sphere of the home so frequently figures as an inverted allegory of nations and public concerns – a device Atwood also draws upon in the trilogy (Rao 101). McKeon summarizes this intrinsic link between the private and the public: "The realm of privacy in modern life is not (only) an alternative to the public but (also) its internalization, a truth that has

become best known through the feminist maxim ‘The personal is political’” (McKeon 716).

Throughout her career, Atwood has engaged with questions of privacy. Pilar Somacarrera points out that “Atwood has always been concerned with the interface between the public and the personal worlds, and she has often referred to the blurry boundaries between them” (Somacarrera 43). Somacarrera offers the same feminist maxim McKeon cites as the apotheosis of internalized public politics to sum up Atwood’s early poetry collection *Power Politics* (1971). In a later “Note on *Power Politics*” (1973), Atwood herself comments on why it is so difficult to separate private life from public life:

We would all like to have a private life that is sealed off from the public life and different from it, where there are no rulers and no ruled, no hierarchies, no politicians, only equals, free people. But because any culture is a closed system and our culture is one based and fed on power this is impossible, or at least very difficult. . . . So many of the things we do in what we sadly think of as our personal lives are simply duplications of the external world of power games, power struggles. (Atwood, qtd. in Somacarrera 43)

Atwood was to continue her interrogation of private and public politics in her later short stories and novels. Frequently, this interrogation employs the domestic sphere as a foil for an allegory of national discourses. According to Eleanora Rao, throughout her oeuvre, Atwood repeatedly pairs the personal and the national to challenge “dominant discourses of home and homeland” (Rao 101). Yet Atwood’s most elaborate pre-*MaddAddam* portrayal of a private sphere both reflective of public politics and acutely at risk occurs in *The Handmaid’s Tale* (1985).

In *The Handmaid’s Tale*, both narrative structure and content engage with the problematic separation of public and private. The novel’s totalitarian Republic of Gilead with its suppression of female individuality prefigures the surveillance society of the *MaddAddam* trilogy, though the latter’s surveillance culture no longer discriminates between genders and applies just as much to the novels’ male protagonist. In contrast, the female narrator in *The Handmaid’s Tale* specifically functions to highlight the dystopian politics pervading both private and public spheres. Carol Ann Howells comments on Offred’s homodiegetic narration: “This narrative strategy reverses the structural relations between public and private worlds of the dystopia, allowing Atwood to reclaim a feminine space of personal emotions and individual identity, which is highlighted by her first-person narrative” (Howells 164).

Both *The Handmaid’s Tale* and the *MaddAddam* trilogy offer dystopian visions of societies deprived of privacy and both react to contemporary developments. Atwood’s earlier dystopia registers the advent of credit cards and the fear of data surveillance this allowed (Mead), a concern radically amplified in the trilogy’s digital culture. Today the concern is about the “increasing corporate ownership of privacy, and about the effects such ownership may have on the nature of Western democracy”, as Atwood comments in a review of another dystopian novel, Dave Eggers’s *The Circle* (Atwood, “When Privacy is Theft”). Dystopian fiction, like Orwell’s seminal *1984*, has always afforded a privileged arena for negotiating the competing social values of privacy and surveillance (Marks 5, 41).

The overall plot of the three novels in Atwood’s dystopian trilogy, *Oryx and Crake*, *The Year of the Flood* and *MaddAddam*, hinges on a central catastrophe in which a global pandemic, precipitated by an act of bioterrorism, decimates most of the human

population. This watershed event structures the novels' temporal outline. All three texts reflect on the pre-pandemic past from a narrative present after the catastrophe. The retrospective narratives present a dystopic vision of a near-future society and recount the events leading up to the pandemic, while the narrative present situated after the near-extinction of the human species invokes the genre of post-apocalyptic fiction (Howells; Snyder). While dystopian narratives invite readers to examine current events and opinions in light of their potential future consequences, the post-apocalyptic genre goes further and ponders, in absentia, the social fabric underlying modern societies as well as the very possibility of social structure once modernity's central institutions have been removed. In Atwood's trilogy, these two generic modes correspond respectively to an imaginative extrapolation of current political and social dynamics around genetic privacy and a more existential contemplation of the social role of privacy in the concentrated forms of surviving social collectives after the pandemic. In the texts, the two modes overlap since the retrospective narration of the pre-pandemic dystopia is marked by the critical and epistemically privileged perspective from the post-apocalyptic present.

In the *MaddAddam* trilogy, representations of privacy through space are more pronounced in the dystopian society before the pandemic, for the simple reason that the physical spaces which were usually construed to represent the private have become literally uninhabitable after their abandonment during the pandemic. The novels' central spatial metaphor for its inquiry into genetic privacy is hence located in the dystopic society before the pandemic and introduced in the first volume, *Oryx and Crake*.

The focalizer in this novel is Jimmy and through his vision the reader is shown the drastic social division between the rich techno-scientific elite – living in fortified compounds – and the rest of society who live a precarious existence in the “pleeblands”. Jimmy's best friend Glenn (or Crake, his code name in an underground eco-terrorist group), is a geneticist who rises quickly through the compound ranks and is provided with exorbitant funding and autonomy in pursuing his research. Ostensibly at work perfecting highly profitable methods of genetic human enhancement, Crake is actually the architect of a global pandemic. Having released the virus that wipes out most of humankind, Crake's plan is to repopulate the earth with the new humanoid species he has been developing, the Crakers, so as to put an end to human-made environmental disaster and have the new humans live harmoniously within the larger planetary ecosystem. After Crake's death, Jimmy is left to lead the Crakers out of their laboratory home and into what remains of the post-apocalyptic world.

The space in which the Crakers are created is the inner sanctum of Crake's private research facility, the “Paradice dome” (360). This dome, located within a walled compound structure and thus sealed off from the outside of the pleeblands, serves as the central spatial metaphor for the trilogy's exploration of genetic privacy. Each additional spatial layer around the dome, first the compound then the pleeblands, expands the novels' complex portrayal of competing private and public spheres. The emerging picture of Jimmy's and Crake's society demarcates the space generally available for privacy, and specifically for genetic privacy. What is more, in this thoroughly geneticized society it is increasingly hard to think at all of privacy as separate from genetics, with genetics transforming anything from food and pets to human identity, family relations and medicine. Explicit anxieties about genetic privacy thus find an amplifying echo in the trilogy's broader panorama of privacy in a contemporary world shaped by rapidly advancing technology and new avenues for surveillance. The space of Crake's research facility in *Oryx and Crake* is marked by an

abundance of surveillance technology and the novel's depiction of the Crakers within the Paradice Dome, as the next section will show, firmly establishes genetic privacy and its larger implications as central concerns in the trilogy.

Inside the Paradice Dome

The laboratory in which the Crakers are created, raised and studied is literally at the centre of Crake's research facility, an impressive dome within the RejoovenEsense compound. The name of the Paradice dome is a combination of Crake's paradisiacal vision of a post-human earth and an ironic reference to the elimination of chance in creation – "dice" – through genetic engineering. Crake does not share his vision with Jimmy, so Jimmy's first contact with the Crakers is framed by their ostensibly commercial end:

they were standing in front of a large picture window. No: a one-way mirror. Jimmy looked in. . . . That was his first view of the Crakers. They were naked, but not like the Noodie News: there was no self-consciousness, none at all. At first he couldn't believe them, they were so beautiful. . . . 'Are they robots or what?' he said.

'You know how they've got floor models, in furniture stores?' said Crake.

'Yeah?'

'These are the floor models.' (355)

From the first, Jimmy is cast as a voyeur prying on the naked Crakers and violating their privacy. Their perceived lack of self-consciousness underlines the impression that Jimmy's voyeuristic gaze wrongly disrupts a space believed to be safe from prying eyes. The further representation of the Crakers does not linger on this intrusion into their space, however. Instead, the Crakers are explicitly framed in terms used to describe inanimate goods to be sold. As the passage continues, Crake explains the business plan behind the Paradice Project: "They'd be able to create totally chosen babies that would incorporate any feature, physical or mental or spiritual, that the buyer might wish to select." (357) The key to this programmability of the Crakers is genetic engineering, more precisely a form of creating chimeras through genetic splicing. The Crakers' genetic constitution includes an insect-repellent odour reaped from citrus fruit DNA as well as a mating cycle gleaned from unnamed species. Presented to Jimmy as the full-range exemplars of state-of-the-art genetic technology, the Crakers' idiosyncratic – and to an extent satirical – traits all feature in Crake's blueprint for a radically revised human and planetary future.

As *sui generis* genetic creations, the Crakers have no control over their genetic information, nor much control over anything else. Their lack of private space within the laboratory away from cameras and "hidden mikes" (396) captures this absence of control over the genetic data used to create them. The "one-way mirror" through which they are observed not only emphasizes the fact that they are under constant surveillance but also symbolizes the power relations at work in the laboratory: the geneticists have complete access to the Crakers' genetic data and material while the Crakers, as passive objects of study, have no insight into the procedures of the experimental set-up. The Crakers' physical lack of privacy is a material echo of their informational transparency. In this way, the laboratory setting is infused with a new metaphorical significance of space that reflects the transformation in conceptions of privacy away from concealment to control of information.

The Crakers' lack of participatory agency in the experimental process is all the more pronounced given that their very being is the result of genetic manipulation and artificial reproduction. They are also unaware of anything outside their contained bubble in the Paradice dome, which features an artificial ecosystem and "a clever projection device that simulated dawn, sunlight, evening, night" (355). The violation of bioethical norms is stark. Crake, the researcher, has given no consideration to privacy in his design of the experiment and the Crakers themselves have certainly not consented to be research subjects.

The novel ponders the consequences of this lack of control in two significant ways. First, it is the Crakers' want of agency, genetic and otherwise, that enables the central catastrophe of the story. The replacement of humankind with the new humanoid species is the final act in Crake's plan. Were the Crakers ethically empowered participants in a genetic modification trial, and all consequences of their participation outlined to them, chances are that they would have declined the use of their genetic material for this purpose. This thought experiment might appear silly since Crake executes the experiments without any show of ethical qualms and seems very unlikely to ask the Crakers' permission; yet highlighting the real-world equivalence of his non-consideration of research ethics sheds light on the novel's warning against the dire consequences of unregulated experimental practice. In fact, Rosario Arias regards these particular ethical concerns as the key to the trilogy's dystopian vision, "since Atwood shows us the dramatic consequences for the human race of crossing the line between scientific advances and unregulated experimentation" (Arias 380-81). J.B. Bouson similarly emphasizes the text's focus on "unregulated biotechnological experiments" (Bouson 10).

The second way in which the Crakers in their research setting function to question their lack of genetic privacy is by contemplating the social role of privacy in general and genetic privacy in particular. As a microcosmic vision of a future society, the Crakers – in accord with Crake's designs – live a communal existence where ideas of private spaces are as unheard of as the concept of private property. In their communal society, the distinction between public and private is no longer meaningful. The only remnant of privacy in their social setting comes to the fore when the Crakers retire from the community to have sex. On the one hand, this lack of privacy echoes a pre-modern configuration of communal life where private and public spheres did not as such exist. On the other, since the Crakers represent a vision of a future society that is temporally post-modern, the collapse of the private in their community resonates with such statements as Facebook founder Mark Zuckerberg's, who posited that privacy is no longer a social norm today (Kirkpatrick). The increasing willingness of individuals to relinquish control over their data, as Sarah Igo outlines, points towards decreasing concerns about privacy, at least in certain demographics (Igo, "Beginnings" 18). In the case of the Crakers, their lack of privacy reflects their subordinate status in the power relations governing the laboratory setting. But it might also evoke a utopian idea of equality beyond humanist individualism. Yet, as the trilogy as a whole suggests, when confronted with a different social paradigm, the Crakers' lack of privacy is associated with a lack of power and agency. The theme of the Crakers' powerlessness towards the socially predatory humans is conspicuous especially after the pandemic, when they are able to fend off animal predators but prove helpless in the face of human aggression. Through the Crakers, privacy becomes associated with power and the absence of such power is displayed as highly threatening.

This absence of power at the centre of the Paradice dome corresponds to a similar state outside the compounds in the pleeblands. One of the compounds' most

nefarious business models is to infect people in the pleeblands with newly designed diseases so that they must turn to the pharmaceutical corporations for the costly medical therapies needed to cure them (248). The pleeblands become vast experimental settings for the compounds to produce profits. Crake once refers to the pleeblands as "a giant Petri dish" (338) – mutated forms of engineered viruses insidiously alter the experimental conditions. Turning the pleeblands into a "testing ground or live-in laboratory for biotechnological and pharmaceutical possibilities" (Cooke 110), the compounds take away the peoples' control over their lives and biomedical information, treating them in the same way Crake treats the Crakers.

In some ways, the research setting in the Paradice dome is an extreme version of some common medical practices today. Sealed off even from company oversight, the airlocked space around the Crakers' habitation can also be interpreted as an experimental environment in which proprietary genetic data is highly protected, all the more so since Crake is loath to divulge any aspect of his plans. On some level, then, the research conditions appear to adhere to current best practices: the use of the Crakers' data is monitored and protected using the highest standards of cybersecurity available. The similarities only go so far however: the lack of consent on the part of the Crakers, and the fact that the control of their data lies exclusively in the hands of the experimenters, undermines any illusion of the Crakers as empowered test subjects. And, after all, their data is only secure as long as it has not yet been patented and commodified. Genetic privacy's association with individual control and, if such control is lacking, with economic and political exploitation is crystallized in the trilogy's representation of the Paradice Dome. The text's depiction of the spaces beyond Crake's laboratory expand and amplify the scope of Atwood's interrogation of genetic privacy, in particular by connecting it to the novels' negotiations of corporate surveillance and new online privacy cultures.

The Compounds and the Pleeblands

The dome's location within the boundary fences of the RejoovenEsense compound, to take a step outward from the Paradice research area, foregrounds the compound itself as a significant space for the text's treatment of genetic privacy. The corporate-run compound firmly situates the genetic research conducted within its perimeter as a market-oriented enterprise. Privacy is valued primarily as a means to protect the compound's patents and market-share. The research thus grouped under the corporate umbrella includes Crake's project but symbolically evokes all the genetic engineering projects in the novels, from the human-pig chimeras bred for organ transplantation to the genetically modified viruses released into the population. The compounds' interest in preserving the confidentiality of the genetic data of research subjects is equally motivated by commercial reasons. They protect their proprietary data because it would be detrimental to their earnings not to. This profit-driven handling of personalized information resembles the behaviour not only of big pharma but also of companies offering direct-to-consumer genetic testing. This latter form of genetic testing is a relatively new phenomenon and describes the now available option to have your DNA tested without prior consultation of a clinician or healthcare provider. Companies like 23andMe rely on this format. Extending the settings for genetic testing beyond the medical sphere and into the commercial has sparked fervent debates in juridico-ethical circles about the inadequacy of current legislation to protect consumer's privacy, especially in the US where such companies are prevalent (Hazel and Slobogin).

The compounds are separated from the outside world and their "tight security" (60) makes Jimmy think of medieval castles (32). Anyone wishing to enter is subjected

to searches and rigorous identity checks that include fingerprints and iris scans. As Rao notes: "Atwood here returns to the medieval images of turrets and fortresses; as in *The Robber Bride*, such imagery is suggestive of strong demarcations between inside and outside. In *Oryx and Crake* to be 'at home' implies living within a policed enclosure." (Rao 109) Once inside the walls, surveillance technology abounds. Besides stressing the spatial divide between compounds and pleeblands, this association of home as an unfree space shows how the novel's private spaces present an internalized echo of the public spaces that surround and increasingly suffuse them.

Another central aspect of the novels' exploration of privacy in the compounds – but also generally in the trilogy's world – is the internet and its impact on distinctions between public and private. Described by Amanda Cole as "one of the foremost concerns that colours Atwood's work" (Cole n.p.), the internet in the novel becomes a space for Jimmy and Crake to indulge in viewing pornography and gaming. The internet also enables them to develop their personalities and individual interests, partially with detrimental outcomes: Crake's obsession with the game Extinctathon, which is based on knowledge of extinct species, significantly foreshadows his later plans to counter humanity's role in destroying other species by annihilating the human species in return. Besides offering a questionable space for individual development, the internet in the novel brims with opportunities to invade the privacy of others, though mostly these invasions are staged events. Jimmy and Crake for instance follow a performance piece online in which a female artist has wired her entire apartment with surveillance equipment and live-streams her every action (96-8). It is through her that Jimmy hears a work of Shakespeare recited for the first time, stressing how the internet contributes to Jimmy's personal development and later career as a "word person" rather than a "numbers person" (28). In *Oryx and Crake*, internet culture is subjected to a complex critique and its problematic dimensions laid bare, among which are "its casual voyeurism and exhibitionism" and importantly "its insidious erosion of the notion of the private" (Daniel Mendelsohn qtd. in Cole n.p.). The trilogy features several hidden online chatrooms, in particular the one linked to the Extinctathon game which serves as a forum for the *MaddAddam* bioterrorist group. These chatrooms are evidence of an attempt to create private spaces online that are secure and afford the freedom of a private digital self in the otherwise completely transparent and trackable sphere of the web (for a discussion of digital personal privacy and its impact on users' online identities and subjectivities, see Capurro et al.).

In the context of internet culture, hacking becomes another critical feature in the trilogy's discussion of privacy. The internet can be a private space but its vulnerability to hacking is foregrounded in the novels, especially in the concluding volume, *MaddAddam*. The internet is frequently imagined in the text as a space you enter through a "portal" (195) and where you then follow hidden pathways to find safe zones and chatrooms. The virtual space of the internet adds a third space to the compounds and pleeblands, and while the corporate security forces, the CorpSeCorps, attempt to control it, hackers like Zeb, a central character in the trilogy's third volume, continuously undermine their control and gain access to secret information. In the novel's world, Brazil is "where the digital darkside flourished. They'd hack you as soon as look at you down there. Roaring business in politician's medical records and sordid affairs" (59). Reflecting contemporary concerns with data security, the novel demonstrates an understanding that privacy today is largely dependent on the ability to control the use of one's personal information. And while the compound walls are imposing manifestations of the corporations' efforts to separate a private inside from a

public outside, the novel's depiction of hacking shows these boundaries to be much more in flux than the imposing physical walls suggest.

The influence of the CorpSeCorps does not end at the compound walls. In addition to such classical surveillance technologies as CCTV or "buttonhole cameras" (*Oryx* 301), genetic information is featured in the trilogy as a staple in the security services' bio-informational arsenal of stored data. In the pleeblands, numerous means of trying to disappear from the Corps' radar are on offer, such as the surgical alteration of fingerprints or ears, but the only method of really assuming a new identity is through a "DNA infusion" (*Flood* 30). The only way to regain a sense of genetic privacy in the trilogy's encompassing surveillance culture is hence a desperate and ironic attempt to find refuge in someone else's genes.

The prevalence of surveillance in the pleeblands is most pronounced in *The Year of The Flood*, however, which recounts the stories of Toby and Ren, as well as other characters associated with the eco-religious sect God's Gardeners. As dissenters from the corporatist culture, the God's Gardeners are aware of the dangers posed by surveillance technology. They do not use phones because the CorpSeCorps "had robots listening in for special words" (56), and one could be observed through the mobile cameras: "if you can see it, it can see you!" (67) While the God's Gardeners manage to carve out for themselves a space of privacy, at least for a while, they are in ever-present peril of being overheard, observed and evicted from the sanctuary of their rooftop garden.

It is also a strict rule among the God's Gardeners never to put anything down in writing because "your enemies could trace you through it" (6). This retreat from writing is especially evocative in a discussion of privacy because penning letters and committing personal thoughts to diaries figure as cradles for modern conceptions of privacy in both Habermas and McKeon's studies. While readers do not relinquish the written word and follow Atwood's characters into the privacy of their own thoughts, the abnegation of writing in the God's Gardeners proves a resounding reminder of how closely entangled notions of privacy and private correspondence are with traditional forms of enacting this privacy in reading and writing. In the trilogy's post-apocalyptic world, such private practices seem at first to have all but disappeared. At the very end of *MaddAddam*, however, reading and writing are again emphasized as crucial forms of giving shape to experiences of the private.

Privacy after the Apocalypse

Before the pandemic, space had functioned as a central metaphor for privacy – and its vulnerability – but after these spaces have been abandoned, privacy also seems to have lost its meaning. In *Oryx and Crake*, Jimmy roams the post-apocalyptic present believing he is the sole survivor of humanity. Without a social context in which to distinguish between private and public, privacy has indeed become almost meaningless in his world. Yet privacy as a human desire persists in Jimmy's annoyance at the Craker children who continuously drop in on him, ask him questions and "stare" at him (7), completely oblivious to his privacy needs. For in the Craker society, privacy does not feature at all after the apocalypse. Marks notes: "The post-human world seems also a post-surveillance world" (Marks 114). One might expect that the trilogy's negotiation of privacy ends with the dystopic world before the pandemic, but this turns out not to be the case. Instead, the text continues its investigation of individualism and autonomy after the catastrophe, concepts that are linked with genetic privacy in the pre-pandemic society in the novels.

When, in *MaddAddam*, Jimmy is united with other human survivors to form a post-pandemic colony, private spaces again become an issue. After the catastrophe, there are two utopian models of society competing against each other. The Crakers represent Crake's utopian vision of a post-human species, sharing the planet with all other animal and plant forms while themselves living together in a self-less community. Then there are the human survivors who come together to construct a future for themselves. While there is the suggestion of a fresh start also for homo sapiens in this scenario in a world without surveillance or capital, the band of survivors grapples with concepts and knowledge from before the pandemic. Unlike their Craker counterparts, they cannot shed their human heritage so easily. Toby, one of the central characters in both *The Year of the Flood* and *MaddAddam*, struggles to define her place in the community and often wishes they had at least doors in their improvised habitat to allow for a bare minimum of privacy (*MaddAddam* 26). More significantly, she begins to keep a diary and compiles a written testimony to human customs from before the catastrophe. Thus she invokes the tradition of constructing a private space and an individual voice in writing. And just as the Craker society finally merges with the human colony by beginning to interbreed, so the concept of human individuality is passed down from Toby to one of the Craker children by introducing him to the private practices of reading and writing. The vital importance of reading and writing as private practices is a theme Atwood has continued to consider throughout her career, most recently in her novel *The Testaments* (2019), which, as a sequel to *The Handmaid's Tale*, again sets private documentation against surveillance.

The boy, Blackbeard, eventually takes over from Toby the role of the nascent society's chronicler. This emphasis at the end of the novel on the diary as a quintessentially private form gives rise to at least two different possible interpretations. On the one hand, Blackbeard's role as diarist can be interpreted to demonstrate the trilogy's final investment in modern notions of human individualism and autonomy which are at stake if the space for privacy is lost. On the other hand, his taking over from Toby as the storyteller of the new society – which entails that he reads aloud what he has written – can also be seen as possibly signalling a transformation of storytelling away from the written word – and its implication of individualism – back to a pre-modern communal orality which is, after all, the dominant mode in the Craker society. However, there are passages in the text that hint at a continued presence of writing and individuality among the Crakers, tipping the balance in favour of the interpretation of Blackbeard as perpetuating privacy through writing. Already in *Oryx and Crake*, Crake warns of the danger of art and religion for the peaceful communion of the Crakers (186, 359). And in *MaddAddam*, Toby equally frames Blackbeard's writing as a possible prefiguration of the Crakers' path towards repeating human history: "she finds [Blackbeard] at the sandbox. He has a stick, and the paper. There's his name in the sand. The other children are watching him. . . . Now what have I done? she thinks. What can of worms have I opened? . . . What comes next? Rules, dogmas, laws? The Testament of Crake?" (204) Toby's concern suggests that as the Crakers learn to write, social processes associated with writing might begin to change the Crakers' communal society. In a cyclical vision of history, Toby's reference to "dogmas" evokes the pre-enlightenment historical context from which modernity's separation of public and private spheres was to evolve. Whether the new post-apocalyptic social order, in which humans and Crakers begin to form alliances, will indeed repeat human history remains open at the end of the trilogy. Privacy's uncertain future at the end of *MaddAddam* can be seen as reflecting the uncertainty at the heart of the contemporary "privacy crisis" Sarah Igo identifies.

Highlighting another way in which the concept of privacy extends beyond the apocalypse, Katherine Snyder draws attention to a formal aspect of the trilogy that uses the watershed event of the pandemic to elucidate the entanglement of public and private spheres. Snyder identifies the central catastrophe of the trilogy as prefigured by the numerous private tragedies in Jimmy's life as outlined in *Oryx and Crake*: "The novel demonstrates how the trauma of the protagonist's early losses . . . sets the stage for the re-enactment of cataclysmic trauma on the global stage." She elaborates: "By juxtaposing the horror of human extinction with more mundane, private losses . . . *Oryx and Crake* challenges its characters' and readers' attempts to draw a *cordon sanitaire* between what happens at home and what happens in (and to) the world" (Snyder 473). In other words, the novel aesthetically connects the private with the public. Snyder argues that this aesthetic construction in *Oryx and Crake* – and, I would add, in the trilogy as a whole – "emphasizes the futility of attempting to quarantine an individual's subjective interiority from relations among historical subjects who are connected to each other in ever-widening, overlapping circles of power and obligation: the familial, the corporate, the national, the global, the non-human and the post-human" (Snyder 473). Projected onto the foil of public and private, Snyder's argument reminds us of McKeon's statement that the "realm of privacy in modern life is not (only) an alternative to the public but (also) its internalization" (McKeon 716). Just as Atwood outlined with regard to her early poetry collection *Power Politics*, the socio-political constitution of the public sphere affects the possibilities for privacy. In Atwood's *MaddAddam* trilogy, the different public/private spaces of pleeblands, compounds and most centrally the Paradice dome, exemplify this principle. Bereft of individual agency, the Crakers' lack of genetic privacy constitutes the novels' most condensed "internalization" of the repressive surveillance society that governs the public sphere in the trilogy.

Conclusion: Genetic Privacy as Power and a New Space for the Novel

Atwood's previous engagement with questions of the politics and power of private and public spheres finds an echo and a new genetic configuration in the *MaddAddam* trilogy. The text combines the politically attuned representations of individual agency and liberty of *The Handmaid's Tale* with a contemporary concern about the transformation of privacy through genetic information. The text's investigation of new forms of privacy as well as the political consequences of their uncertain state in a society marked by rising levels of surveillance and corporate influence makes symbolic use of space, as is most vividly illustrated by the one-way mirror through which the Crakers can be observed but which allows them neither privacy nor agency in return. Here and elsewhere in the trilogy, representations of space acquire a metaphorical level in their negotiation of informational rather than merely spatial privacy. This dynamic is highlighted in the trilogy's spatial representation of the internet where information is metaphorically rendered as space. In the trilogy, pervasive surveillance of public and private spaces comes to stand in for the informational transparency of the individual that includes genetic and other biological data.

The representation of the artificially created Crakers in the laboratory of the Paradice dome reflects powerfully on the question of control over the use of one's genetic data in our world today. The trilogy registers the shift in contemporary conceptions of privacy from a "right to be let alone" towards a more agential power over how one's private information is managed, especially in the public sphere of the internet. The lack of such power in the Crakers finds aesthetic expression in their spatial confinement inside the inner laboratory of the Paradice dome. Each additional spatial

level around the dome reveals a new facet of the trilogy's exploration of all domains of privacy and of the space available for genetic privacy. In this way, the Crakers' lack of control stems from the socio-political structures that, level by level, define the outside space of Crake's research facility and offer the Crakers themselves as its most condensed internalization.

As the reader emerges from the Crakers' inner bubble, the trilogy's dystopic society is revealed as a corporatist system in which privacy in general is considered valuable only insofar as it protects trade secrets. The pervasive surveillance operation controlled by the CorpSeCorps marks any sense of privacy as a potential security threat. Connecting the novels' general depiction of private spaces with the issue of genetic privacy, the surveillance system operates on genetic data as a final marker of identity.

The ethical concerns about a genetic privacy at risk raised throughout Atwood's trilogy – from the God's Gardeners opposition to the CorpSeCorps to the Crakers – are inextricably linked to questions of agency and power. I have argued that a formal-historical contextualization of privacy and the modern novel elucidates that what is at stake in the *MaddAddam* trilogy is a modern conception of individual liberty and autonomy, concepts predicated on protected private spheres. Atwood's set of novels powerfully demonstrates literature's and literary scholarship's potential contribution to public discussions about pressing issues of privacy. The novel form as such offers a rich aesthetic resource through which to explore socio-ethical developments and consequences of contemporary science and technology, as bioethicists have increasingly recognized. This paves the way for future transdisciplinary research combining literary studies methods with concepts and concerns from bioethics, law and science policy.

Atwood's trilogy not only reflects and draws attention to contemporary anxieties about challenges to our notions of privacy. The text also connects biology to politics throughout every dimension of society and asks policy thinking to do the same. It emphasizes that any discussion of the value and protection of privacy in science policy and social debate needs to take into account the complexity of social and increasingly biopolitical relations that shape and enable the multiple manifestations of privacy today. As the novels show, this social complexity ranges from architectural constructions of space to dimensions of class, economic systems and internet culture. As a result, the novels suggest, privacy cannot be thought of in isolation from questions like corporate and governmental surveillance, social divisions of wealth and advances in science and technology. The trilogy also entails aesthetic innovations in response to the changing landscape of privacy in the form of its representation of genetic information through metaphors of space. Atwood's engagement with genetic privacy through the novel form partakes in and renews a continuous and socially relevant literary entanglement with one of the foundational concepts of modernity.

Acknowledgements

This work was supported by the Center for Genetic Privacy and Identity in Community Settings (GetPreCiSe) at Vanderbilt University, a Center of Excellence in Ethical, Legal and Social Implications Research (CEER) funded by the National Human Genome Research Institute (1RM1 HG009034). I would like to thank my colleagues in GetPreCiSe, especially Jay Clayton, Ellen Wright Clayton, Sarah Igo, Colin M. Halverson, James Hazel, and Christopher Slobogin.

Notes

1. Allison Dunlap refers to such readings of *Oryx and Crake* as the traditional interpretations of the text. Dunlap herself argues that the novel enacts a critique of ecotopianism, but as part of her argumentation she provides a useful overview of critics who read the text as a critique of capitalist science (“Eco-Dystopia: Reproduction and Destruction in Margaret Atwood’s *Oryx and Crake*.” *Journal of Ecocriticism*, vol. 5, no. 1, 2013, pp. 3-4). For an analysis of the trilogy’s other two novels in this vein see J. Paul Narkunas, “Between Words, Numbers and Things: Transgenics and Other Objects of Life in Margaret Atwood’s *MaddAddam*.” *Critique*, vol. 56, 2015, pp. 2-3.

2. While Igo’s study is primarily concerned with the U.S., her observations of privacy’s Western history reach beyond the national context. For a brief discussion of, especially current, developments in privacy debates and policies in Europe and the United Kingdom see Raymond Wacks’s *Privacy: A Very Short Introduction*. Oxford UP, 2015.

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