GENERIC AFFINITIES, POSTHUMANISMS, SCIENCE-FICTIONAL IMAGININGS

SPECULATIVE MATTER: GENERIC AFFINITIES, POSTHUMANISMS AND SCIENCE-FICTIONAL IMAGININGS

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ABSTRACT

Amidst the technoscientific ubiquity of the contemporary West (or global North), science fiction has come to seem the most current of genres, the narrative form best equipped to comment on and work through the social, political and ethical quandaries of rapid technoscientific development and the ways in which this development challenges conventional understandings of human identity and rationality. By this framing, the continuing popularity of stories about paranormal phenomena and supernatural entities – on mainstream television, or in print genres such as urban fantasy and paranormal romance – may seem to be a regressive reaction against the authority of and experience of living in technoscientific modernity. Nevertheless, the boundaries of science fiction, as with any genre, are relational rather than fixed, and critical engagements with Western/Northern technoscientific knowledge and practice and modern human identity and being may be found not just in science fiction "proper," or in the scholarly field of science and technology studies, but also in the related genres of fantasy and paranormal romance. This thesis offers an interdisciplinary examination – a science-fictional and posthumanist reframing – of the lines of affinity and relationality between these discursive and imaginative domains. Bringing together genre theory and critical posthumanism – itself informed by postmodern and poststructuralist feminism, postcolonialism, science and technology studies, and critical animal studies – with readings of several series in print (Christine Feehan's Ghostwalkers, Kim Harrison's The Hollows, and Justina Robson's Quantum Gravity) and on television (*Fringe*, *True Blood*, and *Sanctuary*), I argue that such narratives' powerful abiding interest in the domains of knowledge, experience and imagination that lie within, along and outside the margins of scientific orthodoxy, registers a broader cultural apprehension of the conditions and critical perspectives by which Western/Northern humanism, anthropocentrism, modernity, and technoscientific authority have been and can be seen to be destabilized.

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I would like to dedicate this thesis to my parents, Valerie and Lorne Wiebe, and to the cats Xavier and Max, who were not able see it through to the end.

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INTRODUCTION: Origins and Speculations

Origin Stories

We humans are narratively-minded creatures. That is one of the basic premises of this thesis – the idea that storytelling is a primary means by which we engage with the world, a key mode of framing information and experience that allows us to comprehend and miscomprehend our sense(s) of self (individual and collective), of what lies beyond the boundaries of self, and how that boundary between self and other can change. Framing, as Judith Butler argues in *Frames of War*, isn't simply about cognition and meaning-making – the processes by which we consciously recognize what or who is framed; framing also has affective dimensions that allow us to apprehend what lies outside our frames, to feel the instabilities introduced by the slight breakage inevitable in reframings, the misalignments introduced through the reiteration of frames as images, ideas and information circulate. This tension inherent in the processes of framing entails an insight that underlies a range of traditions and methodologies in literary and cultural criticism: that the stories we tell are not always what they seem. The stories that I'm interested in are the stories of popular culture, and this thesis is an argument about how a particular generic web of pop cultural narratives functions to frame the complex and contradictory experience of living in the mystifying and high-tech societies of the contemporary West/North.

As narrative creatures we like our origin stories and this thesis has its own originary tale. In this particular framing my investigation begins with a cartoon, an animated television series produced by the Buena Vista division of Walt Disney entertainment. The series, a 1990s production, is called *Gargoyles*, and what continued

to resonate with me more than a decade after its original airing was the program's persistent fusion of science and sorcery, myth and magic, futuristic technologies and medieval monsters. In *Gargoyles*, I noticed, neither the superstition of medieval Scotland (where the creatures themselves originated) nor the rationalism of contemporary America offers an adequate explanation of the world, and in the science-fictionalized and fantastical *Gargoyles* reality, neither magical powers nor technoscientific wizardry alone are sufficient tools for coping with the complexities of "postmodern" existence.[1] For the characters in this television show, sorcery and science are more potent when used in combination, and most effective when combined with good intentions.

One of the most fully elaborated expressions of this *Gargoyles* philosophy plays out over four episodes dealing with a hybrid character named Coldstone. In these episodes, the collision of magic and technoscience in the hands of 'villainous' characters leads to and exacerbates instability – specifically, the hybridization and fragmentation of body and identity. Coldstone – 'created' by the series' primary villains – is the gargoyle version of a cyborg, a monstrous splicing of legend and technology and the 'freakish' collision of sorcery and science. Like Frankenstein's monster, Coldstone is a patchwork masculine creature, made up of, in this case, the stone remains of three long dead gargoyles and several pieces of machine. But the pieces of Coldstone's body are

[1] Donna Haraway credits popularization of the term *technoscience* to Bruno Latour, who uses it to mobilize an "attack [on] the distinction between what counts as 'science' and as 'society'." Building on this, and on Heidegger's notion of "technicity" to signify the process of changing "all the world into resource," Haraway's feminist and leftist interpretation of "technoscience" asks questions about "for whom and how" the products and practices of technoscience work, and seeks not just the predictable but also the unexpected results of technoscience – the potential for good surprises (*Modest_Witness* 279-280, note 1). For Haraway, technoscience is "more, less and other" than ideology, exceeding most critical definitions, even that of Latour, whose ideas she repeatedly invokes (49-51).

stitched together with robotics instead of surgical thread, initiated and reawakened with technoscience and magic, and the fragments that make up the creature's identity and psyche are a mix of computer programming with the memories and personalities of the one female and two male gargoyles 'he' used to be. Coldstone's resurrection is confusing, traumatic; however, as his story develops and magic and technoscience are (re)combined by other characters with good intentions, we see a more harmonious and restorative possibility for magical-technoscientific collaboration – a balm for psychological ruptures and a cure for gender and body confusion, with all the problematics that any such notions of healing entail.

Unlike Frankenstein's monster, Coldstone is a "postmodern" chimera suffering not from loneliness or the rejection of his maker, but from mental instability and gender trouble – internal conflicts that mirror his own hybridity but also reflect contemporary boundary instabilities and cultural schisms, including crises of subjectivity and gender identity, and more broadly, the divides between nature and culture, reason and feeling. The difficulty of Coldstone's hybrid identity comes through in the dis-unity of his body, in confused and contradictory speech and actions, and in the battles that take place within the virtual reality of his mind, where fragments of memory reside alongside actualized versions of gargoyle souls and software. It is, finally, the collaboration of magic and machine combined with good intentions that cures Coldstone of his confusion – but not his hybridity (an ethical as well as a moral lesson not that surprising in a children's cartoon). The beneficent motivations here involve repaying a debt owed and compensating Coldstone for the trauma of resurrection by providing each of the reawakened gargoyle souls with a body of his or her own. The additional bodies, one male and one female, are robotic, and the transfer is all magic; in the end Coldstone's

confusion is largely resolved – good and evil, male and female, occupy separate physical forms. This 'healing' of Coldstone's psychological ruptures and gender trouble may imply that a reasonably unified, mostly stable, and unambiguously gendered identity and subjectivity can be achieved, a problematic notion clinging to the exclusionary and inequitable coherence promised by liberal humanism. Nevertheless, the narrative arc that leads up to this 'resolution' displays a great deal of complexity and a heightened apprehension[2] of contemporary anxieties, instabilities and contradictions, and the subjects that emerge at the end of this storyline are not completely tidy – or human, for that matter. In the *Gargoyles* reality, hybridity remains, good may emerge from evil, and magic and technoscience coexist, collaborating for the benefit of those struggling to escape the confusion of the contemporary world.

One of several striking things about this television series is that the hybridity of characters like the gargoyle Coldstone articulates a kind of categorical impurity embedded in the very fundaments of the show and others like it. *Gargoyles* was ostensibly created for children but its complex storylines and reasonably sophisticated intertextuality (including references to Shakespeare and diverse cultural mythologies) indicate that it's actually meant for a mixed audience. And it develops those storylines and intertextual references within the conventions of multiple intersecting and overlapping generic frames: animated children's television, fantasy fiction, science fiction, detective stories, conspiracy theory, and so on. This generic impurity is not unique to *Gargoyles* but, rather, might be considered just one example of what Gary K.

[2] Judith Butler's *Frames of War* remains my reference point here, for the way Butler distinguishes between "recognition" and "apprehension," the latter signifying a "mode of knowing that is not yet recognition, or may remain irreducible to recognition" (6). We may apprehend what lies outside our framings even if those frames provide obstacles to recognition.

Wolfe has described as the "implosion" of genre in the "postmodern" moment, where the evolution of genres entails increasing intercourse between them.

As I embarked on a course of cross-media science fiction studies with my M.A. research I quickly discovered the difficulty of finding "pure" science fiction in contemporary popular culture and developed a growing suspicion of my attempts to do so. At the same time, this analytic challenge provoked for me an interest in what this phenomenon of cultural production, this intercourse of genres, says about the broader cultural context within it takes place. More specifically, in terms of the prevalent and persistent intersections between science fiction and fantasy I observed, I was driven to contemplate the place of the magical in contemporary technoscientific societies and, eventually, how the relationships and boundaries discourse communities draw between and around science fiction and fantasy are gendered, often androcentric, Eurocentric and anthropocentric. At the same time, while investigating the critical science and technology studies informing and informed by Donna Haraway's infamous feminist treatise on hybrid subjectivity in postmodern technoscientific naturecultures,[3] I began to develop a speculative hypothesis that critical posthumanism, with its attentiveness to the contingency of the lines between human/animal/machine and nature/culture, and (via Haraway's "Cyborg Manifesto") its embrace of mythic figures, might have something invaluable to offer in terms of making sense of what's going on in hybrid generic texts but also in the societies that contribute to their production.

This thesis is an attempt to bring these interests, ideas, and hypotheses together. In the following pages and chapters I discuss a number of science-fictional and

[3] I first encountered the essay "A Manifesto for Cyborgs" (*Simians*) in a fourth year undergraduate course on the History and Theories of Media, and have been finding new nuances and insights in it through multiple readings throughout the years since.

fantastical texts from different media – primarily television and print fiction series, initially chosen because of their popular accessibility and parallel serialization but also because I found that these spaces represented lively breeding grounds for generic intercourse and for the gender issues bound up with what I found to be not just questions of genre but also epistemology and ontology. My thesis is not just an act of literary and media criticism but also a theoretical intervention, wrestling with and bringing into conversation ideas from a few different fields and traditions, particularly science fiction and fantasy studies, genre theory, feminist theory, science and technology studies, theories of modernity and postmodernity, and critical posthumanism. Critical posthumanism is itself a hybrid, interdisciplinary framework, already informed by many of the discourses I engage with, as well as postcolonial theory and the emerging field of animal studies. Posthumanism can mean many different things, as Cary Wolfe points out in the introduction to *What Is Posthumanism?* (xi), and this is part of what makes it a useful concept for analysis. Culturally, we live in a world where human embodiment can be technoscientifically altered, where some of us dream of creating sentient technologies or living indefinitely as human-consciousness-merged-with-machine, where evolution seems, for some, to no longer be a matter of "natural" but technoscientific selection. The concepts of "natural" and "nature" have themselves become inescapably problematic. This is a space-time in which traditional anthropocentrisms have been further dramatically unsettled at the same time that traditional humanism has been indicted for its phallogocentric and Eurocentric biases and exclusions, in which the interactions of unequal powers in the political and economic spaces of a globalized planet have forced some of us to rethink the notion that the "West" or "Global North" have the keys to singular and universal

definitions of modernity and (technoscientific) progress. We may be, as Steven Best and Douglas Kellner have written, in a transitionary period from modernity to postmodernity, yet we are also in a post-postmodern environment, where postmodern concerns are not strictly academic issues but have seeped into the collection (un)consciousness of the popular public sphere. We imagine. And we speculate.

Speculation: An Etymology/Archaeology

In a contemporary global capitalist environment, stock market speculation may be, for many people, the activity that the word *speculation* most readily brings to mind. As Nicole Shukin writes, "Speculation, as Jean and John Comaroff theorize it in relation to what they term 'millenial capitalism,' is the very modus operandi of neoliberal culture" (Shukin 184). However, even in this formulation, situating speculation deeply within a capitalist system, speculation is more than virtual economics. Shukin's reference here is not simply to trading in stocks and bonds, the taking of potentially profitable economic risks, but also to ideological and material conditions. "Stock market speculation drives virtual flows of capital and yields staggering bonanzas of wealth without, it would seem, any material links to labor and nature" (184), but those flows and bonanzas bear the traces of the labour, materials and entities they exploit. Speculation is, at its core, an imaginative practice, possible of conjuring "'the global' itself as an imagined community" – for good or for ill (and many shades in between). However, the imaginative is deeply entwined, inextricably, from the material; the line between them, though worth drawing, can only be drawn in the moment, contingently (as the following pages and chapters are driven to trace). And if speculation is so much a part of our current moment, reflective of and productive of collective anxieties and desires – nightmare, dream, and sometimes (in pop psychology terms) self-fulfilling

prophecy – what and how we speculate matters (in a sense, this is as much pun as a blank statement, an indication of thinking of speculation as matter, as a material practice).

Speculation as imaginative practice is also part of contemporary arts and entertainment, a matter of fictions in and across multiple media – the matter and material my thesis engages with most directly. I say contemporary because speculative fiction, as a genre, is a fairly recent invention, though in retrospect, we might apply the *speculative* adjective to numerous historical creative forms, including mythical stories, fairy tales, medieval romances and utopias. In a broad sense, we might consider a wide range of dramatizations across media as speculative, seeking to play out and materialize the stuff of our imaginings in "safe" fictional spaces.[4] However, in current creative taxonomies, "speculative fiction" often serves as an umbrella term, intertwined with the "fantastic," to encompass the "speculative" genres of science fiction, fantasy, horror[5] and others running counter to conventional realism. In more specific usage, "speculative fiction" (or "speculative literature," or "speculative fabulation") has been taken to represent a distinct genre or, perhaps anti-genre, of writing, a way of working against and challenging some of the more masculinist and technorationalist formulae and biases of the traditional science fiction canon. In this sense (often associated with non-realist feminist fiction), speculative fiction might be seen as a genre of particularly literary concerns and aesthetics.[6] More productively, I would argue (though at the risk

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[4] Thanks to Susan Fast for reminding me of this broader applicability.
[5] See, for example, the Internet Speculative Fiction Database, http://www.isfdb.org/cgi-bin/index.cgi.
[6] Describing developments in feminist science fiction in the 1970s, Merja Makinen writes, "Some writers and editors began to argue it was not 'science' fiction at all and adopted the term 'sf' as able to signify 'speculative fiction', or 'speculative fabulation', which they saw as more appropriate terms for the kind of fiction they produced" (136).

of watering down the critical specificity of generic labels), speculative fiction offers a way of talking broadly about contemporary genre-mixing, the persistent hybridity of fantastic cultural production across multiple media – including the science-fictionality of fantasy and the fantasticality of science fiction.

Speculation is also the matter of contemporary cultural and critical theory, a circumstance marked mostly concretely, perhaps, by a cross-platform open-access publication titled *The Speculative Turn: Continental Materialism and Realism* (2011). Featuring contributions from such academic trendsetters and buzz generators as Alain Badiou, Bruno Latour,[7] Isabelle Stengers, and Slavoj Źižek, among others, the volume is a collection of recent explorations and 'turns' in continental philosophical thought. Editors Levi Bryant, Nick Srnicek and Graham Harman (themselves self-identified speculative philosophers) cite 2002 as a significant speculative-philosophical moment for an open resurgence of realism – when Manuel DeLanda in *Intensive Science and Virtual Philosophy* and Graham Harman in *Tool-Being* declared themselves *realists*, "perhaps the first time this had been done with a straight face in the recent continental tradition" (2). An interest in new possibilities for realism proves to extend beyond DeLanda's and Harman's work, the authors suggest. It takes several more years, but the next major development Bryant et al. cite involves multiple voices, when "this explicit call for realism was reinforced" by a gathering of sympathetic scholars at "the first Speculative Realism event … held in April 2007 at Goldsmiths College, London" (2). As a

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Makinen connects critic Marleen Barr with contentious attempts to disassociate ('rescue') feminist sf from (the 'ghetto of') science fiction.

[7] The results of Latour's theoretical speculation often exhibit "science-fictional" qualities (Luckhurst, "Pseudoscience" 407). His many published texts include even a "sf novel of sorts" – *Aramis*, "a fictionalized account of the failed development of a French train system which also serves as a primer in [Latourian] theory" (Vint, "Science Studies" 417).

subsequent intervention in the ongoing conversation about the possibilities for realism and materialism in contemporary philosophical thought, *The Speculative Turn* engages (and engages with) a number of intellectuals who might currently be considered speculative 'philosophers,' bringing several of them into direct dialogue. Among the issues raised by such work are questions about subjectivity; the relationship between politics and ontology; the ethical possibilities of new realist and materialist positions; and the implications of recent theories and developments in physics, neuroscience and artificial intelligence. Speculation necessarily crosses disciplinary divides.

What I find most productively interesting in the concerns of such speculative philosophers is their attempt to speculate about 'being' beyond the 'human,' addressing materiality and reality in a way that is not simply anti-Cartesian and anti-humanist, but also perhaps anthropocentric, so that their work might be considered one way of thinking through a posthumanist conception of the universe. I find these possibilities exciting but I am not much of a philosopher and the philosophical style of reasoning seems to me too often obtuse. As a scholar of Western/Northern especially Anglo-North American popular culture, I am more interested in how speculation is at issue in the popular imagination and in my immediate environment (however slippery concepts like 'immediacy' and 'environment' may be). I am intellectually intrigued by the resonance of speculation in relation to contemporary entertainment, including popular narrative in its commercial forms and the appeal such mass-mediated imaginings exert for a never-entirely-passive public. In the following critical work I attempt to think through some of these issues, these speculations, in relation to cultural theories and studies of popular culture, and the cultural anxieties and hopes that speculative imaginings express.

One starting point then, for this attempt, is in Haraway's "Manifesto for Cyborgs" as I have suggested above – the essay that introduced me to what I immediately recognized as an exciting and insightful conceptualization of the world. Haraway's theorizing often takes the shape of storytelling, enacting the importance of narratives and tale-spinning (and trickster figures) for humans and for all of the domains and entities tangled up in the human-nonhuman webs in which we live, particularly as a means of working through the complexities of postmodern and posthuman existence. I was drawn to her perception and to her descriptions of our realities' leaky boundaries, but I was also inspired by her preoccupation with feminist science fiction, authored by "theorists for cyborgs," and the ambivalent, critical pleasures such stories have the potential to provide (*Simians* 173). These texts are populated by "cyborg monsters" who problematize "the statuses of man or woman, human, artefact, member of a race, individual entity, or body" (178), "defin[ing] quite different political possibilities and limits from those proposed by the mundane fiction of Man and Woman" (180). 'Different' possibilities are not always progressive or just – even cyborgs must remain accountable for narratives that can still reify oppressions and marginalizations: Vonda McIntyre's *Superliminal*, for example, hampers its sf feminism with colonial discourse, Haraway observes (179). Yet even when speculative storytelling provokes in us a reproachful response it still has the capacity to challenge our imaginations if we are attuned to an open but critical perspective. Speculation needs to be grounded in an awareness of material realities. It must also be anchored by 'empirical' investigations (in the feminist sense),[8] in serious critical research, in the recognition of all kinds of

[8] Lynn Spigel, for example, contends that empirical evidence is not about 'Truth' or "the philosophical tenants of empiricism'; it is not a matter of finding 'objective' evidence but of gathering what evidence one can and asking the right questions of it (Spigel 12-15).

agencies and the risks such agencies entail. Speculation must be grounded in accountability. When we find ourselves in science fictional realities, where fact and fiction, fantasy and reality are blurring, we need to remain rooted in embodiment and materiality as well as to imagine possibilities, attentive to the implications and responsibilities entailed by what we imagine. This is my goal throughout this thesis.

Science/Fiction[9]: A Prelude

"I study science fiction." I hold in my pocket several answers to questions about what it is that I do as a graduate student and academic. "Science fiction" is one response I pull out fairly often, with conviction but uneasily. It's a convenient shorthand phrase, bringing to mind, for most people, a relatively concrete (though highly variable) body of texts, images and themes. But those associations can also complicate my explanation. Because as much as I am interested in canonical and conventional science fiction, this thesis is about texts that fit uncomfortably, tangentially or strategically under the science fiction umbrella and about the flimsiness of the umbrella itself but its generative power as well. There are also ways in which this thesis is not about science fiction or its texts at all. Or only in as much as they represent a form of cultural speculation, engaging with and expressing larger issues related to, for instance, what is and what is not called 'science,' and to the perceptual frameworks and social collectives that shape such definitions. And, in

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Such evidence may lie in historical records or in the absence of records, in "established archives" and in "popular media" (Spigel 12-13).

[9] I borrow this typographic formulation from Elaine L. Graham, signalling the messy and productive relationships between science and popular culture in their mutual roles as representations of the world, "construct[ing], mediat[ing] and constitut[ing] human experience" (Graham 14).

a science-fictional way, this project is about the future as well as the present and near past – an interrogative about alternatives and possibilities.

Rather than diving into the core of the science fiction genre here or exploring its more stable forms, I find myself caught up (and I am obviously not alone in this concern) with the instability of science fiction as a category but also its imaginative and concrete power, and I am particularly struck by activity around the boundaries of the genre and the texts that lie at its margins. To better denote these varied and various texts, discourses and practices, I have tried telling people I study "speculative" rather than "science" fiction, but that can create more confusion than elucidation. Speculative fiction persists as an ephemeral term and one that many people outside critical and fan communities have never heard. And when I explain that many of the texts I examine get classified as futuristic fantasy, urban fantasy, or even paranormal romance – though fantasy or romance with technoscientific preoccupations – that information sometimes generates even more uncertainty as well as feeling to me a bit like a cop out, for when I frame such works through a lens of science fiction criticism I do so with specific intent, as I hope the following pages make clear. If I'm feeling slightly more forthcoming when questioned I might offer "ideas about science in science fiction." But again, although this is true, I am still uneasy with casually dropping the terms "science" and "science fiction" as if I and my questioner can rest assured we share a common understanding of what they mean.

Uneasiness, including that which I feel when describing my project, may be a primary motivator for my research, an affective response that taps into a

constellation of cultural tensions circulating in the North American public and popular sphere – tensions I see, sometimes identify with, and perpetually hope to better understand. I refer to cultural tensions about science and technology, what properly fits under or into these categories and (their relationships with) what doesn't, and what that means for our collective co-existence. I am keenly interested in how these tensions play out in fictional narratives and the categorization of such narratives but also in the social and cultural implications of how we choose to conceptualize the limits of science and science fiction and the work those limits do. These labels emerged and evolved as contested terms – that isn't new. What is continuing to change, however, is the speed and intensity of global communication and migration, and a Western/Northern cultural self-conception that finds its centrism challenged by rising economic, techno-industrial and ideological powers, and questioned by former colonies and other marginalized groups that include scientific thought and technological development among their criteria and goals for self-determination. One definition of science is no longer enough, or to be more accurate, it is becoming increasingly hard in many contexts to frame science as singular, ahistorical, apolitical and universal. (Multiple sciences for multiple worlds.)

I see potentially encouraging possibilities in uneasiness about how the (historical and cultural) West and (contemporary) global North have maintained a hold over what does or does not count as science. Unseating that persistent authority does not have to be about contesting or disproving Western/Northern sciences (although I do not claim to deny that our sciences are sometimes subject to

such attacks for various and often contradictory reasons). Nor does it need be about technophobia or a rejection of the imbrication of sciences and technologies in research and in our daily lives (although I continue to approach narratives of inevitable technoscientific progress with suspicion). Rather than a reactionary move trying to displace Western/Northern sciences or resist new technologies, we might set our efforts toward better understanding their multiple and overlapping genealogies, their limitations and their material effects, expanding our notions of science (and technology) to include other reliable ways of knowing, being and becoming and to acknowledge the processes and paths that mean no theory or object has ever been self-contained in its emergence or its implications.

I find, in the kind of uneasiness that I refer to here, a broad public sense (conscious or not) that our social collective has yet to get it right when it comes to how we approach questions of authoritative knowledge. Things might be otherwise – worse, yes, but certainly, alternatively, better. Circulating tensions and shared uneasiness have a role to play in spurring collective imaginations to see the possibility of better futures and maybe even provoking action toward bringing such futures about. The forms in which these tensions find expression and circulate are significant, as are the narratives (text-based and otherwise, fiction and otherwise)[10] through which they take on recognizable shape, as well as the ways in which our cultures handle both. Otherwise is not inevitably better (for whom?) and

[10] It is important to attend to the tendencies, strengths and constraints specific to each media form. See for example, Brooks Landon's discussion of sf film in contrast to literature (1992); N. Katherine Hayles is also an active proponent of what she calls, in *Writing Machines*, "media-specific analysis" (2002). Nevertheless some sociocultural and generic concerns cross media, as the following chapters will explore.

possibilities do not necessarily translate into actualities. But the uneasiness itself is worth a closer look as are the speculation and responses it often engenders. How is it expressed? Where? By whom? To what end? What stumbling blocks trip up our imaginations? Where and how do we continue to perpetuate the universalizing and exclusionary figures and narratives that hold us back?

Transitionary Thoughts

I am interested in issues about science, genre and thought (and their social and ethical implications) fairly broadly. I am intrigued by the multiplicity of knowledge worlds and by the fiction that dramatizes this concept in very concrete tangible ways. As I proceed with my analysis, I will however, try to remain attentive to, if not explicitly address, a number of issues not fully articulated here, issues of globalization and transnationalism, of mass media/mass culture, of the relationship between popular culture and society, of the relationship between genre and social belonging. I am interested in all these large and broad concerns and I think they are important. They frame and inform my project. But to reiterate, I am particularly concerned with the multiplicity of ideas about science, how particular experiential and imaginative worlds make it possible to recognize certain things and people and practices within the umbrella of science and where this realm of possibility breaks down. Although this is a key critical concern in contemporary cultural and social theory, as I will discuss in more depth later on, I also see it as part of the North American (at least) political unconscious, so that pop culture takes a powerful interest in the margins of science and in the scientificity of what Western/Northern sciences have discarded. I would argue that we can't read "superstition" in North American "modern" culture, at least not the most

common strains of it, as simply a misunderstanding or lack of understanding of science. Rather, I read this as evidence of the penetration and absorption of critiques of authoritative knowledge and hopefully, a wide-reaching desire for something better. I explore this reading in the following chapters.

Contemporary science fiction and fantasy can demonstrate, variously, a wide-spread apprehension of the contingency and historicity of knowledge – also of "modern," "human," and "science" – as well as an apprehension of the possibility of recasting definitions, even if the possibilities we are offered in popular mass media are, at times and in different ways, impoverished or problematic. As Ien Ang points out, because "popular cultural commodities are an integral part of the organization of everyday life in capitalist modernity, the study of their forms, uses and impacts is crucial for understanding 'culture' today" (236). That doesn't mean that popular culture is only worth studying where it can be recognized as empowering or as an oppositional expression, or where it can be condemned for perpetuating hegemonic structures and representations,[11] or that popular culture can be neatly sorted into these reductive categories. This kind of either/or categorization misses out on the tensions and conflicts imbedded in cultural production.[12] Popular culture, including science fiction and fantasy, expresses but can also destabilize, or ambivalently embrace *and* defamiliarize, hegemonic frameworks and ideologies – resisting *and* perpetuating existing discourses

[11] For a slightly different framing of this debate, see Ang: "Some authors have forcefully argued for seeing popular culture as a site of resistance and empowerment (Fiske, 1989; Hartley, 1992), although uncritical celebrations are generally rejected as 'populist' (Morris, 1988; McGuigan, 1992)" (263).

[12] To again quote Ang, "At its best, work in [the study of popular culture] highlights the complex contradictions and relations of power that are articulated in popular cultural markets, texts and audiences, informed by the work of theorists such as Pierre Bourdieu (1984) and Michel de Certeau (1984)" (236).

and power relations all at once. I embark on my analysis with this awareness of the inherent contradictions of popular culture in mind.

I begin, in chapter one, by way of examining some of the distinctions we in the North/West have made and continue to make between science and pseudo-science, particularly in fiction, and some of the ways in which these distinctions have been challenged or found difficult to sustain. I read, in the science-fictional television show *Fringe* and the print fiction paranormal romance series Ghostwalkers, representations of "pseudoscience" as a kind of posthuman science reaching beyond the bounds of what current Northern/Western science and humans currently know and understand. I also note a kind of uneasiness with the complexities of contemporary reality but also with technoscience that has been removed or detached from the feminine and the emotional, and an assertion of the material power of love.

In chapter two, a critical/theoretical exploration bridging chapters focused more on textual analysis, I seek to make sense of these texts' relation to genre discourses and theory. From a postmodernist, poststructuralist and, I would argue, posthumanist approach to genre theory I understand genre as a world-building framing, a kind of imaginative work with material implications. From this perspective, I also see generic texts as nodes in larger webs of ideas and cultural production, so that genres are inevitably intertextual and hybrid. According to this insight, I find science-fictionality (a term I adapt from Istvan Csicsery-Ronay, Jr) not just in science fiction "proper" but in other intersecting and overlapping genres such as urban fantasy and paranormal romance.

This generic reframing allows me to approach, in chapter three, the print fiction series the Hollows and the Sookie Stackhouse stories (in print serialization and the

television show *True Blood*) as science-fictional fantasies and engagements with Western/Northern technoscience posthumanism. I discuss urban fantasy and its apprehension of the crises of reason and modernity and critiques of Western/Northern technoscience that have unsettled the universal authority of "modern" technoscientific discourses. In the Hollows I find a frameshift in the modern/masculine binaries underlying oppositions of magic and science and a destabilization of Northern/Western anthropocentrism. In the Sookie Stackhouse narratives I find an attempt to judge phenomena by way of embodied experience and an assertion of the material reality of things beyond what Western/Northern technoscience can objectively measure.

Chapter four is another critical/theoretical bridge, building on the critiques of modernity and anthropocentrism introduced in chapter three and linking them more concretely with posthumanism and with the fields of science and technology studies. My attempt here is to trace some of the generic affinities between fiction and theory and to grapple with posthumanism as critical framework but also as contemporary condition. This leads into chapter five, which is my last chapter of analysis. Here I offer readings of abnormality in the television series *Sanctuary*, and of posthumanism and quantum physics in Justina Robson's futuristic fantasy print fiction series Quantum Gravity, as apprehensions and workings through of some of the ethical issues and implications of posthumanism in theory, in fiction and in reality. My conclusion then works toward some of the broader critical and political implications of my project and the significance of the imagination to ideas about progressive social change.

Science fiction has been held forth as one possible venue for engaging with the ethical, political and social implications of science and technology. In the *Routledge Companion to Science Fiction* (2009), Sherryl Vint situates science fiction literature as a

parallel intellectual pursuit to the field of science studies,[13] primarily because of their mutual interest in ideas about "the history, practice, and social consequences of developments in science and technology" ("Science Studies" 413). In her overview of the relationship between these two fields, Vint argues that science fiction, when "at its best," "might be considered the literature of science studies," because of the way it often speculates about the ethical implications and logical consequences of technoscientific developments (421-422). Drawing from and speaking to the humanities *and* the sciences, the speculative imagination of science fiction can engage with technological and scientific 'facts' and theories, it can speculate about the complexities of technoscientific realities, and it can, sometimes, complicate the lines we draw between and the definitions we ascribe to science and non-science, the human and non-human. However, this thesis is, in part, an argument that this kind of engagement doesn't take place exclusively in narratives we easily recognize as science fiction. Some science and technology studies, some science fictions, and some science-fictional fantasies share what might be called a generic affinity, similarities of attitude and address, a particular interest in, even orientations toward and framings of "science" and the kinds of knowledge and knowing entities that "science" helps us to imagine.

[13] Science studies, being "the work of a broad group of interdisciplinary scholars who vary in their premises, methods, or conclusions" (Vint, "Science Studies," 413).

CHAPTER 1: Science, the Paranormal and Love

Paranormal Science and Fiction

The relationship between science and science fiction is an imaginative one (see, for instance, Csicsery-Ronay, Jr 111-114), so that the "science" in "science fiction" manifests as a particular framing of facts and of reality rather than as strict adherence to scientific accuracy. One of the implications of this framing is that the science-fictional imagination is not only located within science fiction "proper" (a concept I will discuss further in the following chapter) but seeps into popular culture more broadly, into neighbouring genres, into cultural texts and practices. This leakage of science-fictional speculation outside the bounds of what is conventionally named science fiction is an indication that negotiations of what science means in the cultural imagination – sometimes to the point of interrogation and even critique – register in complex ways in popular culture. Such activity is especially lively at sites where rationality and fantasy meet.

In this chapter I begin to look at one of these heterogeneous sites – the paranormal – examining ways in which popular culture engagements with the science-fictional imagination attempt to negotiate the relationship between conventional Western science and a broad collection of phenomena and knowledge practices often labelled "pseudoscience," as well as with the knowing subjects of both. The narratives I analyze in this chapter take place in contemporary settings where paranormal research is not framed as pseudoscience but as an extension and expansion of the science we know. This limited recognition of marginal sciences is a way of playing with genre but also with conceptions of reality and human becoming. Verification and validation of the paranormal is limited to small groups of people in these fictional worlds, implying,

loosely, a sense of speculative revelation rather than fictional imagination. Laying claim to verisimilitude, almost in the vein of realist rather than fantastic fiction, these texts suggest not only that the paranormal may be scientific but also that it may be the stuff of reality, actuality, not just fiction and fantasy. Circulating outside of the niche milieu of intellectual criticism, appealing to large reading and viewing audiences, these popular imaginings of what science might be and what it might include register a public discomfort with the simultaneous and contradictory uncertainty and authority of conventional Western science. Yet it is important to note that this discomfort does not have to manifest in a rejection but, rather, enacts a reframing of science – an intervention in the shaping of the "modern" scientific imagination.

Although imaginings of the paranormal figure prominently in twenty-first century media and entertainment, paranormal storytelling predates its expressions in contemporary popular culture. In Europe and North America, investigations of telepathy, telekinetics, precognition and other paranormal phenomena have long been linked, contentiously, with the search for scientific knowledge. This relationship intensified in the nineteenth century, as the discovery of new scientific "truths" and the rise of new forms of experimentation and observation facilitated curiosity about, even belief in, unseen forces and phenomena that had yet to be discovered. In this context, amidst the rise of experimental science but also new intellectual and social challenges to the positivist scientific paradigm, the investigation of spiritual, psychic and paranormal phenomena could be cast as a scientific enterprise. At the same time, popular fiction began to exhibit a particular interest in the incompleteness and fallibility of human scientific knowledge, often resituating the paranormal as natural phenomena that science does not yet understand (Traill).

Such ideas continue to inform many contemporary representations of the paranormal, often underlying popular media fusions of the paranormal and science. In many examples across media, paranormal phenomena are not figured as manifestations of the supernatural, and belief in their reality is not represented as superstition. Rather, in such texts, the existence of the paranormal functions as a marker of modern humans' limited scientific knowledge. To recognize and come to understand such phenomena is framed, then, as transcending the limitations of our humanity. By this logic, to grasp the paranormal is to reach beyond the human, to strive toward the "posthuman"; paranormal science, in this context, is reframed as "posthuman" rather than "pseudo" science. This kind of "promise" has its troubling dimensions, stirring up, perhaps, technophilic or even eugenic visions of a "better" or "improved" species to replace the humans we know. However, critiques of the modern human in popular culture are not always, necessarily, or straightforwardly alarmist and/or alarming. Though less nuanced than intellectual theory, pop culture reframings of technoscientific possibilities and knowledge production resonate, at times, with elements of the critiques of Western scientific modernity enacted in a much more sophisticated way by feminists, postcolonialists, and advocates of indigenous scientific literacies. Popular media and cultural texts sometimes seek to expand the frames of Western science to encompass what it has previously excluded (such as Eastern philosophies, embodied knowledges, indigenous knowings, the emotional, the traditional, the feminine) as a means of resolving the contradictions inherent in the patriarchal triumphalism and exceptionalism of Western technoscientific modernity.

When mass-mediated popular culture looks to knowledges outside the West, its representations run the risk of perpetuating fetishizations and exoticizations of those

cast as "other" to Western technoscientific modernity; this is hardly surprising. Popular culture certainly has pedagogical functions and potential; yet what I seek in these texts is not a guidebook for achieving scientific democracy and pluralism. What I seek, rather, is a signpost of receptivity, an indication that democratic epistemological and ontological pluralism is not beyond the capacity of the popular cultural imagination. It is significant that popular media register anxiety about Western technoscientific authority without necessarily rejecting the possibilities and promises of its achievements, a suggestion, perhaps, that we can and even want to imagine a world where there is room for multiple knowing subjects and multiple knowings.

This chapter, then, begins an examination of contemporary popular media representations of the paranormal, leaping ahead from the nineteenth century to a discussion of contemporary cultural production in serial form, focusing on the television series *Fringe*, produced by Fox TV in the United States, and the GhostWalkers novels, a paranormal romance series by American romance writer Christine Feehan. By examining the use of the paranormal to evoke what might be termed "posthuman science," I would like to approach our contemporary fascination with paranormal phenomena not in terms of regression or superstition but as a kind of engagement with science and scientific knowing. The 'posthuman paranormal' signals a persistent fascination in our cultural productions with the relationship between human potential and Western scientific understanding, the possibilities and difficulties of reimagining both, and the confusions and complexities spurring us to try.

I approach both television and paranormal romance novels as examples of mass media and popular culture and, as such, as markers of cultural anxieties and dreams. TV and print fiction are, obviously, different media, with distinct production processes,

commercial/industrial constraints, and genre discourses. Nevertheless, due to the substantially sized audiences and serial nature of both television and popular romance (multiple iterations, multiple (re)framings), I find it useful to study texts from these media forms in dialogue with each other, seeing their popular appeal as correlated to their capacity for registering popular sentiment (anxieties and promises both) and the conceptual and material contradictions to which popular storytelling tends to respond.[14] Television and novels exhibit significant contrasts in terms of collective versus individual authorship, intended and implied audiences, and in storytelling means (visual and aural or verbal inscription) – yet these differences make cross-media texts' imaginative resonances even more striking. What I see resonating between *Fringe* and Ghostwalkers is a slight frameshift in the texts' fictional reimaginings of the modern global/American world, an interest in the idea that there is a relationship between modern technoscientific knowledge and human potential (capacity as well as identity), and an effort to temper the threatening potential of Western technoscientific modernity by embracing ways of knowing and bodies of knowledge that conventional science has tended to exclude: the paranormal and emotion, especially, love.[15]

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[14] For audiences, the appeal of serialization includes the "familiarity and continuity" such ongoing stories promise and develop (Watson qtd. in Maund 147). As Kari Maund notes in her discussion of series in *The Cambridge Companion to Fantasy Literature*, "Series fiction is … found … most particularly within genre fiction … And in all cases, series are popular." (147)

[15] This desire to bring together science and love has sympathetic resonance with many feminist science studies scholars' call for a more loving science. See, for example, Hilary Rose, *Love, Power, and Knowledge: Towards a Feminist Transformation of the Sciences* (Indiana University Press, 1994), or Donna Haraway's emphasis on loving interspecies relationships in *When Species Meet* (University of Minnesota Press, 2008).

The Posthuman Paranormal

Tales and theories of the paranormal, broadly defined, are immensely popular in contemporary North American culture. Ghost hunter reality TV programs depict paranormal investigators seeking to document ghostly manifestations on mainstream television. Films like *Paranormal Activity* (1, 2 and 3) explore strange and scary phenomena by way of alien visitation. Fictional programs such as *Medium* or *The Ghost Whisperer* show women in sympathetic communication with the dead. Superhero films, cartoons and comic books, such as the *X-Men* series, feature supernormal characters with a host of paranormal talents.[16] And in a range of popular media, vampires, werewolves, witches, demons and other supernatural characters abound. In an age of technoscientific ubiquity and hegemony, North American society continues to be vastly and profoundly intrigued by phenomena and possibilities that lie, seemingly, beyond the technoscientific domain. This persistent fascination with the "unscientific" complicates attempts to define the "modern" West or North in opposition to a superstitious "premodern" East or South. Yet, as I suggested above, it is important to note that the persistence of such perspectives does not generally or necessarily entail a rejection of science and loss of faith in science's explanatory power. This complex and conflicted attitude toward science and the "unscientific" shows up in many contemporary representations of the paranormal. In this context, engagements with "pseudoscience" and imaginative attempts to bring the paranormal into the realm of scientific explanation may indicate an attempt to reconcile the appeal of the paranormal

[16] For recent analysis of such works see, for instance, Annette Hill, *Paranormal Media: Audiences, Spirits and Magic in Popular Culture* (Routledge, 2011); and Jeffrey J. Kripal, Mutants *and Mystics: Science Fiction, Superhero Comics, and the Paranormal* (U of Chicago P, 2011).

and supernatural with rational knowledge – to extend the reach of science, and our own powers of observation and understanding, beyond what we currently are and know.[17]

Narratives featuring "pseudosciences" such as parapsychology have frequently been excluded from science fiction "proper," or relegated to the subgenres of "science fantasy" or "soft" science fiction. Yet pseudoscientific paranormal phenomena such as "psychokinesis" and "precognition" are staples within the science fiction genre, figuring in the works of many well-known and widely recognized sf authors and texts. Take, for example, the "precogs" who feature in Philip K. Dick's "Minority Report" and its Hollywood adaptation (2002), or the frequency with which paranormal talents figure into the serial narratives of shows like *Star Trek*, in its many iterations. These are not rare examples: within science fiction the paranormal has a lengthy pedigree. In the genre's formative days, Victorian science fiction writers such as H. G. Wells often worked elements of the paranormal into their fiction, exploiting cultural ambivalence about the scientificity of the paranormal and its narrative appeal (Luckhurst, "Pseudoscience," 410). Wells, for instance, incorporated hypnotism into the proto-genetic engineering plot of *The Island of Doctor Moreau* (1896), despite his scientific training and public dismissal of psychical research (410).

This interest in paranormal science as storytelling fodder is, clearly, not restricted to explicitly scientific fiction in the nineteenth century but represents a broader interest in phenomena beyond the currently known and understood. Tales featuring the paranormal become particularly prominent in fantastic fiction during this

[17] The paranormal also offers a means of staking claims for what science is and is not: "empirical science has made use of paranormal phenomena as a means of defining and redefining its domain, invoking the paradigm of the known and the unknown as dynamic motor in order to expand its parameters to 'push the envelope', as the current expression goes" (Slusser, "Paranormality" 24).

period, manifesting as what Nancy H. Traill identifies as a distinct "mode" of the fantastic.[18] Stories in the paranormal mode offer "challenges [to] empirical reality" (Traill 6), so that phenomena that might otherwise be seen as "supernatural" – such as "clairvoyance, telepathy, and precognition" – are reframed as "natural" phenomena, "latent" but "physically possible":

> In the paranormal mode, a *structural change* occurs: *the natural domain is enlarged* and encompasses a special region accessible to those with extraordinary perceptual capacities. … The laws of the physically possible natural domain are not violated, but they are *reassessed*, and their *range is extended* to include the scientifically unproved. (17-18, emphasis added)

Note here, the reframing of both the supernatural and the scientific, the expansion of science to include what it has excluded. Traill connects this rise of the paranormal in fiction with changes in attitudes toward science in the nineteenth century, suggesting that critiques of positivism and uncertainties about the reliability or capacity of human observation and understanding (among other issues) fuelled curiosity about as-yet-unrecognized human and natural potential.[19]

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[18] In *Possible Worlds of the Fantastic: The Rise of the Paranormal in Fiction*, Traill combines analyses of the fantastic (such as Tzvetan Todorov's, where the fantastic is defined by a kind of hesitation toward the fantastic event) with the possible worlds approach to analyzing fictional worlds (see, among others, Eco, Pavel, Dolezel). Using this framework she argues that the fantastic is a cross-genre, transhistorical narrative phenomenon characterized by the integration of fantastic events or characters into a narrative's fictional world.

[19] In such an environment, both laypersons and scientists might and did approach psychic investigation as a site of scientific inquiry (see Traill chapter two especially, where she discusses the relationship between spiritualism and psychic investigation). Approaching similar issues from a different perspective and context (nineteenth century France), George Slusser has also discussed the relationship between "material science," "paranormal phenomena" and "proto-science-fictional responses" in which materialist explanations of the paranormal circulate alongside visions of the paranormal as the reality of hitherto unknown realms" ("Paranormality" 29) – attempts

Note, too, Traill's references here to "a special region accessible to those with extraordinary perceptual capacities" (17), marking paranormal fiction's emphasis on what humans may be able to become and perceive. In the nineteenth-century West, an environment where evolutionary accounts of species origin and descent are gaining authoritative cachet, and where dreams of progress and fears of degeneration thrive, scientific formulations of the paranormal carry strong evolutionary implications. Historically, psychic phenomena have often been seen as gesturing toward future science but also future human development. Roger Luckhurst, in a short analysis of "pseudoscience" in science fiction, lists some key examples, such as the H. G. Wells stories *The War of the Worlds* (1898) and *The First Men in the Moon* (1901), where "telepathy is marked as an evolutionary advance" (Luckhurst, "Pseudoscience" 410).[20] Science fiction continued to demonstrate an interest in various psychic or "psi" powers (also called "psionics"), throughout the twentieth century, with Golden Age authors and editors such as John W. Campbell imagining "psionics" as a step forward in human evolution (Luckhurst 410).[21] Such framings of paranormal talent as part of human evolutionary development remain common in contemporary entertainment where the paranormal often functions as both a sign of and path to posthuman knowing and becoming.[22] These representations frequently persist and thrive in a cultural and

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to make sense of paranormal possibilities in relation to existing and speculated scientific knowledge.

[20] Cf. Slusser's discussion of evolutionary mutation and paranormal phenomena in the 1896 story "Un Autre Monde" ("Another World") by J. H. Rosny ("Paranormality" 29).

[21] See also *Encyclopedia of Science Fiction*, "Psi Powers" (http://www.sf-encyclopedia.com/entry/psi_powers, accessed May 7, 2012).

[22] For George Slusser, who investigates the role of paranormality in the post-cyberpunk subgenre of late twentieth-century science fiction, depictions of the paranormal are, primarily, about the uniqueness of the human mind, and an attempt to ensure that some aspect of human uniqueness (such as the complexity of the relationship between mind and matter) remains beyond the grasp of scientific knowledge and understanding

generic boundary zone where science fiction bleeds into science fantasy and pseudoscience bleeds into science.

***"*Fringe*"* Science**

One currently popular[23] example of the posthuman paranormal can be seen on network television in a program entitled *Fringe* (2008–2013), a science-fictional series that frames and reframes the paranormal in terms of both scientific and human advancement, bringing strange phenomena within the posthuman (and) scientific domain. The "*Fringe*" of the series title is multivalent, naming the science the show explores and the team that investigates the products of that science,[24] and registering the narrative's place at the technothriller and science fantasy fringes of science fiction proper. The show's setting is realist, at least initially, the here and now. Much of the action takes place in and around Boston – a contemporary urban American city that looks, on screen, little different what we might currently visit, imagine, or see on TV or in Hollywood film.[25] And if the technologies and scientific possibilities depicted in the

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("Paranormality"). Slusser's analysis of the texts he discusses is insightful; however, his reading of the paranormal as overwhelmingly concerned with mental phenomena and the human mind leads to a neglect of the ways in which other science-fictional representations of paranormality emphasize the body, feeling and emotion. This is where my own analysis steps in.

[23] Even with a relatively low turnout for part-one of the season four finale, Fringe is estimated to have drawn 2.9 million viewers (http://www.hollywoodreporter.com/news/tv-ratings-fringe-grimm-down-320595). This, of course, doesn't account for fans of the series who choose viewing methods other than network television.

[24] In part, "Fringe" refers to a cross-agency American task force whose members, many of them employees of the Federal Bureau of Investigation (FBI), feature as the TV show's primary characters.

[25] The show's urban and campus spaces (with scenes set in a basement lab at Cambridge University) are familiar in the any-city anonymity of much contemporary film and television, where one city so often stands in for another. According to imdb.com, *Fringe* scenes have been filmed in various cities in Ontario and British

series exceed the currently proven and recognized, threatening the show's realist guise, that can be explained away by the incompleteness of public knowledge – as FBI Agent Phillip Broyles once remarks, discussing a cover-up of a 'fringe' event, "You'd be surprised what you can make the general public believe" ("Jacksonville," 2-15). From this perspective, the series almost looks more like police procedural/conspiracy theory than science fiction. The classified nature of the characters' work, the strange and dangerous cases they investigate, and the familiar setting all operate to position the show, in a sense, at the fringes of science fiction.

Yet, *Fringe* is explicitly framed as dealing with "fringe science," invoking the margins of conventional science by its very name. This naming is foregrounded, briefly, in the title sequence at the beginning of each episode, which changes from season to season. The words flashing by on the screen name orthodox as well as fantastical sciences, staking a claim for a kind of scientific legitimacy by way of this association.[26] Some of these terms (such as "nanotechnology," "artificial intelligence," and "cybernetics" from season one) signify legitimate fields of current scientific investigation – "fringe," perhaps, by way of their location on the leading edge of technoscientific development. Other terms in the title sequences (such as "psychokinesis," "teleportation," "precognition," "suspended animation," "transmogrification") read more like the stuff of science fiction and science fantasy than conventional science, while still others (such as "dark matter") point to areas where scientific fact falls short of what we can measure and infer. Interestingly, the series' attachment to "legitimate" science is reinforced on Fox TV's *Fringe* website: the site

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Columbia, Canada, as well as several locations in New York (http://www.imdb.com/title/tt1119644/locations, accessed June 7, 2012).

[26] See, for instance, this fan-edited clip showing multiple title sequences simultaneously: http://www.youtube.com/watch?v=HqhpMr7tplU, accessed September 9, 2012.

features a section called "The Science of Fringe," offering "lesson plans" on various episode-related facets of conventional science, broadly conceived, provided by an American science education group called Science Olympiad.[27] The relations and tensions between these legitimate and not-so-legitimate scientific domains remain a recurring subtext throughout the series' four (so far) seasons, an ongoing concern that contributes to *Fringe*'s generic identity as a kind of science fiction, despite its paranormal preoccupations.[28]

The setting of *Fringe* is initially, as I have suggested, a world that could pass for an American-centric vision of our own global contemporary. However, by the end of the first season the show has introduced a parallel world to the narrative, and this becomes one way in which *Fringe* legitimates paranormal phenomena – they are not supernatural, but the result of technologies developed in an alternate Earth, an alternate America with alternate sciences. In later episodes that are set in this parallel world, we see unusual technologies at work in a relatively mundane fashion, ranging from an earpiece that functions a bit like a miniature cell phone to a defence process that freezes cosmically unstable regions in amber.[29] Technoscientific development has

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[27] Sample topics include "The Scientific Method" (season two), "Adaptation" (season three), and "DNA" (season four) (http://www.fox.com/fringe/fringe-science/, accessed June 10, 2012).

[28] David Dylan Thomas, in his contribution to the collection *Fringe Science: Parallel Universes, White Tulips, and Mad Scientists*, makes the case that *Fringe* is science fiction. However, Thomas goes on to focus on the show's fearful fascination with the mutated, deformed or deteriorating human body, in effect emphasizing its reliance on elements of the horror genre while trying to situate the show within a tradition of technophobic science fiction. This oversimplifies the show's ambivalent relationship with technology and science and its generic identity.

[29] From Fringepedia: "A chemical substance called *Amber 31422* was developed by Secretary Bishop in the parallel universe to contain micro-black hole events causing devastating tears in the fabric of his universe. The alternate universe Fringe Division uses this technology to quarantine the damaging spatial rifts after damaging energy signatures are detected." (http://fringepedia.net/wiki/Amber)

taken place here along slightly different lines, meaning that science and technologies that seem fantastical in our world can be commonplace, or at least commonly accepted, on the other side. Other technoscientific advances and artifacts are portrayed as deriving from the future, such as a seemingly ancient device planted back in time by characters from the future ("The Day We Died" 3-22), or the strange and advanced tools used by a group of time-travelling men called the Observers. By identifying parallel and future versions of Earth as the origin of strange, seemingly paranormal, technologies, the series normalizes and legitimates the unconventional technoscience that went into creating them, but they become the technologies and science of a different kind of human.

In this context, limited public knowledge and understanding of paranormal phenomena in the show's representation of "our" world is not so much a sign of conspiracy but, rather, functions to reinforce the association between paranormal technoscience and a different kind of human. The most advanced technoscience, paranormal abilities, and scientific understanding are never fully normalized in the show's version of our world. Knowledge of and control over paranormal possibility are reserved for a select, special, few. The Fringe team that investigates and solves cases of "fringe" phenomena features an unorthodox (literally "mad") scientist, Walter Bishop;[30] his son, Peter, a kind of super-genius who faked his way through MIT as an act of youthful arrogance and rebellion; and FBI agent Olivia Dunham, who has paranormal abilities. One of the team's adversaries, David Robert Jones, is another genius of the criminal variety, who uses his mastery of fringe science and technology to wreak havoc

[30] Bishop was incarcerated in a hospital for the criminally insane after the death of his assistant in a lab fire and is released into the custody of his son and the FBI in 1-1. The relationship between Bishop's involvement in fringe science, his genius and his madness is left ambiguous but represented as significant.

first in one and eventually in both worlds. Morally somewhere in between lies the hugely successful technoscientific corporation Massive Dynamic and its founder, Walter's one-time partner, William Bell, who gains access to paranormal technoscience through individual genius (and his previous work with Walter) and well-funded research (the American military is one of Massive Dynamic's biggest clients).[31] These characters represent bridges between the two worlds – figuratively but also literally, by way of transit between them. Walter, while working with Bell, opens a portal between worlds, and crosses over, bringing back the Peter of the other world after his own son has died. Bell, and later Jones, makes use of Walter's portal technology to move between worlds in search of knowledge and power. And Olivia has the ability to cross over without external technoscientific intervention. This interstitial, even liminal, state-of-being, a kind of cyborg subjectivity, operates to some extent as both cause and effect of these characters' paranormal technoscientific capabilities and understanding.

The sense of human 'becoming' rather than 'being' that is invoked by these characters' interstitial status also has evolutionary implications, suggesting that mastery of the paranormal may be a sign of evolutionary adaptation – a glimpse of what humans might become in the future. As indicated above, in addition to the scientists (and scientific criminals) who understand and manipulate fringe phenomena, the series also features characters who exhibit paranormal powers, in particular, FBI agent Olivia

[31] William Bell develops Massive Dynamic after Bishop is incarcerated and the company, which holds many military and defence contracts, is represented as a key and not necessarily trustworthy force in the leading edge of technoscientific development. Bell and Massive Dynamic, then, represent the capitalist exploitation of scientific research and technological development, although this critical framing changes somewhat as the series unfolds, with Massive Dynamic becoming a more benign agent, especially after the shift in timelines in season four. However, both Walter and Bell are made dangerous by their single-minded search for knowledge and fascination with what science and technology can reveal and accomplish, as well as willingness to ignore the greater ethical/moral good in use and development of advanced technoscience (cf. Thomas).

Dunham. As Olivia's back-story is slowly revealed, we learn that she has innate paranormal talent but also that her abilities are technoscientifically enhanced. When she was a child, during a period she has mostly forgotten, she was part of a research project conducted by Walter Bishop and William Bell, using children "predisposed" to paranormal talent as test subjects for a drug (cortexiphan) meant to enhance such abilities. Several *Fringe* episodes deal with Olivia's latent and developing powers – such as controlling electromagnetic energy and other forces, and crossing between worlds – which make her particularly well-suited to her job investigating and combatting fringe phenomena. That Olivia's talents may be a step toward a futuristic version of the human is indicated by some of Walter's descriptions of his work and motivations, as if he is aiming to make a human version 2.0. In one episode he tells Olivia, "We were trying to make you *more* than you were" ("Jacksonville" 2-15, emphasis added), and even refers to her powers as "superhuman" ("Brave New World, Part 2" 4-22). We also get a glimpse of future human development as intertwined with paranormal technoscience in the group of male characters referred to as The Observers. As time-travelling humans from the future, they are revealed to have not just highly-advanced futuristic technologies but also mastery of paranormal powers such as mind reading. One episode set in the near future displays the Observers' advanced development of this talent while suggesting that paranormal ability may be an inherited trait. Here we briefly meet Olivia's daughter, Etta, who has the innate ("natural") ability block the Observers' mind-reading powers ("Letters of Transit" 4-19).[32]

[32] Although most episodes take place in a contemporary setting, two separate episodes in season three and four jump ahead to a vision of the near future. In "Letters of Transit," set in 2036, the Observers are depicted as having depleted the resources of their distant-future Earth and have travelled back in time to take control of and occupy

Olivia's talents, like her daughter's, are innate (if cortexiphan-enhanced), the result, perhaps, of "natural" evolutionary development. But several episodes of *Fringe* focus on efforts to not just accelerate latent human potential but to build a new kind of human that is "better" from the genetic level up. In these scenarios, fringe science becomes a vehicle for transforming and engineering human identity and being into something more powerful than what we are now, but often with horrible results. The series' antagonists have a habit of producing monstrous mutations that distort human identity or the human body (if not both). One scientist who attempts to use cloning to develop "A Better Human Being" (4-13) ends up producing young men for whom hive mentality overrides individuality, leading to a series of murders committed in collective self-defence. Another episode focuses on a significant terrorist group's attempt at "Guided Human Evolution," which produces, in this case, a monstrous porcupine-man hybrid, a human test subject transformed after he buys into the evolutionary and eugenic promise that he can become one of the "children of the new world" ("Nothing As It Seems," 4-16).[33] Even apart from these overt threats, trying to remake and improve the human is, in the series, an ambivalent goal at best. Yet by way of recurring attempts to use fringe science to build a better human, and the perpetual promise that we might be able to do so, *Fringe* links the paranormal and the figure of the posthuman in science fictional terms. What ultimately redeems both – separating ethical and

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21st-century Earth. Previous to this episode they are portrayed as pursuing, dedicatedly if not entirely successfully, a non-Interventionist policy.

[33] Initially this "new world" is depicted as the goal of David Robert Jones who wants to destroy the two existing worlds and replace them with a single world of his own design, populated by advanced and enhanced posthumans. Later we learn that it is William Bell who has misanthropic fantasies of playing God and wants to create a world that is literally posthuman – free, after his eventual natural death, of humans of any kind (4-22). When Olivia and Peter look likely to survive, he positions them as the new Adam and Eve, parents to a new human race. His plans are, of course, foiled by Olivia, Peter and Walter.

unethical technoscience, distinguishing the *post*human from the *in*human – is compassion and love. Walter, Peter, and Olivia are driven to act, to invoke their posthuman potential, out of love.

Paranormal Science and Love

Some of the ground upon which human and posthuman, science and "pseudoscience," are differentiated is gendered. As I will discuss further in the following chapters, the characteristics associated with the scientificity of scientific knowledge and practice as well as with science fiction are the same characteristics Western culture has associated with masculinity: logic, rationality, objectivity. Such frameworks decidedly position emotion, intuition, compassion, and other qualities coded as feminine on the outside of science. This is, of course, in no way a "natural" alignment of gendered terms, and our understandings of the human slide uneasily across them – logic and reason defining the liberal humanist subject, while at the same time emotion, empathy and compassion are idealized as 'human' characteristics that separate us from machines.[34] In the face of transformations to human being and identity, and rapid technoscientific advancement, science fiction plays a role in negotiating what the human and what science are understood to be, functioning as one dimension in a tug-of-war between the reasoning and the emotive human, a singular science and a more pluralistic notion of sciences. These are not simply symptomatic discursive constructs, but part of the ongoing constitution of human subjectivity and modern science, and involve not only the texts that comprise and exceed the sf genre but also the way the term "science

[34] Philip K. Dick's *Do Android's Dream of Electric Sheep?* (1968) is a classic example of this tension, positioning empathy as a test point for distinguishing between humans and replicants but then destabilizing the humans' claim to be feeling subjects. The significance of the empathy test is carried over into Ridley Scott's film adaptation, *Blade Runner* (1982), although it is explored in less detail.

fiction" is used, applied and withheld. Challenges to how we conceive of and understand science fiction, the 'science' in 'fiction,' and the knowing scientific subject, are interventions in this constitutive process, potentially denaturalizing our assumptions about what science and science fiction might mean.

The gendering of both science and science fiction has come under interrogation in feminist writings by several theorists, critics and authors – a growing list, in fact, beginning in the last decades of the twentieth century and continuing into the twenty-first. Masculinized sf concepts, such as the "psionic" powers that Campbell theorized, have been "appropriated by women writers … for feminist ends" (Roberts 8; see also Lefanu 88-89), and in the hands of some writers, so-called "soft" (humanistic) sciences become tools for deconstructing the gender binaries underlying scientific disciplines and the science fiction genre (5). One of the tasks of feminist science fiction (by authors such as Ursula K. Le Guin, Joanna Russ, Octavia Butler, Vonda McIntyre, and many more) has been to contest long-held assumptions about science and science fiction through narrative intervention, using the genre's imaginative flexibility as a vehicle for social critique. In turn, their works have provided fodder for a lively body of feminist science fiction criticism, from individual papers, to anthologies and monographs, much of this informed by and informing feminist science and technology studies.

Such critical work is not always wholly deliberate and conscious, coming from an intellectual and/or activist position of critique. Literary sf, experimenting with narrative form as much as content, may have more power to disrupt and subvert expectations than does pulpy, popular commercial fiction. Nevertheless, commercial speculative fictions express and feed back into cultural imaginings of what science, and technoscience, might be: less coldly rationalist, less exploitative, less caught up in strict

objective materialism. Such concerns produce visions of an extended, expanded, even posthuman/ist science that is not always or entirely at odds with the visions of a more cooperative, democratic, and pluralistic science (open to embodied, feminine, indigenous and other ways of knowing) called for by feminist, postcolonialist, and indigenous science studies scholars. I would suggest that paranormal science fiction, situated in and around the boundaries of canonical science fiction, may be both an indication of a shared (if not universal) desire for expanded sciences and, at times, a manifest critique of the Western, andro- and anthropocentric technoscientific frameworks that exclude alternative knowings. And sometimes it is love, and romance, that lay the ground on which the science-fictional interplay of hope and critique takes place.

Romance – in terms of authorship, readership, criticism, and content – is understood as a markedly feminine genre by contrast to science fiction.[35] As a contemporary commercial category of popular fiction romance is often disparaged as the epitome of an already feminized mass culture;[36] its opposition to science fiction doubles that devaluing along scientific as well as cultural lines. Yet the science fiction

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[35] My focus in the following pages is primarily on print fiction, but genres are similarly gendered in other media, as Barry K. Grant notes of popular genre films (16). In "'Emotions-Only' versus 'Special People': Genre in Fan Discourse," Louisa Ellen Stein examines the intersection of gender and genre in fan discourse in ways that, at times, "overtly or more subtly rework [entrenched] gender/genre binaries," such as those associating science fiction with masculinity, and romance with femininity (5.2).

[36] It's worth noting Andreas Huyssen's argument that modernist culture and criticism has traditionally framed mass culture in general as a feminine and feminized domain (see chapter three, "Mass Culture as Woman: Modernism's Other"). This hierarchy even operates within the realm of mass culture and in "mass culture studies as well" (Modleski 1); cf. Linda Williams on the gendered dynamics of cinema's "body genres": melodrama ("weepies"), horror and porn. Janice Radway's pioneering study *Reading the Romance* (1984) is still frequently cited as one of the first academic projects to take popular romance literature, and women's complex and active ways of engaging with such stories, seriously.

genre is clearly not devoid of romance or romantic pairings, especially in visual media (such as film and television – in *Fringe*, for instance, the romance between Olivia and Peter becomes increasingly important as the series progresses). Nor are romance novels devoid of technological or scientific ideas. Indeed, it is becoming increasingly difficult for authors in the postindustrial global North to avoid at least acknowledging the ubiquity of technoscience (unless, perhaps, one is writing strictly historical fiction). Contemporary popular fiction includes several subgenres and niche markets that highlight and register the fascinations and intersections of technoscience and love for current (especially women) readers: "science fiction romance," "speculative romance," "romantic science fiction," "futuristics," and "paranormal romance," and so on.[37] Science fiction becomes one of many possible ways of framing and iterating the narrative of romance, and romance becomes a way of framing science fiction; the paranormal frames and is framed by both.

[37] These distinct but overlapping terms are meant to designate slight variations in content and form, and perhaps target audience as well. See, for example, an interview with science fiction romance (SFR) author Linnea Sinclair in the comics webzine *Sequential Tart* (http://www.sequentialtart.com/article.php?id=279, accessed February 7, 2011) where Sinclair discusses the sub-categories of SFR and the tensions between sf and romance. The slight variations in word order, modifier and noun, are significant – like the difference between "blue violet" and "violet blue" crayons, as one audience member astutely noted when I presented an earlier version of this work at the International Conference for the Fantastic in the Arts (ICFA) 2011. Terminological concerns have also been expressed by the Fantasy, Futuristic and Paranormal Chapter of the Romance Writers of America. The organization's website had (as late as 2011) a searchable database of its members' works, and results could be filtered by "genre" labels such as "Futuristic" or "Paranormal" and "subgenres" – such as "science fiction," "urban fantasy," "steampunk," and many others (http://www.romance-ffp.com/). Clearly, there are romance writers, and presumably readers, with interests in the technological and the scientific.

Ghostwalkers: The Technoscientific-Romantic Paranormal

The "paranormal" of contemporary romance fiction is not identical with Nancy Traill's conception of the paranormal mode of the fantastic outlined above. As Lee Tobin-McClain observes, "paranormal romance" is a publisher's category not a generic mode, and further, not all paranormal romances conceive of their supernatural elements in natural terms (297-298). However, Christine Feehan's Ghostwalkers series, to which I now turn, does take this approach. There is nothing magical or supernatural about the characters' psychic abilities or their romantic and sexual attraction to each other. These phenomena are part of existing reality, and heightened, not through magic, but through technoscience, even if that science is highly speculative and only vaguely described.

Feehan features prominently among lists of bestselling paranormal romance writers for her numerous love stories about shapeshifters, vampires, witches, and other supernatural and human characters.[38] Yet in 2003 Feehan began publishing a series in which she deliberately chose to eschew the supernatural and reframe her engagement with the paranormal in technoscientific terms. As she explains on her website, she "always wanted to do an action/thriller series grounded in science with heavy paranormal elements."[39] Grounding this series, Ghostwalkers, in science, Feehan ends up, intentionally or not, narrativizing a kind of intercourse between love and technoscience, romance and science fiction, demonstrating what can happen when

[38] Feehan has been most prolific in her Dark series, 23 novels narrating the lives and tribulations of the "Carpathians" – a fictional fusion of shapeshifter and vampire. There are seven books in her Drake Sisters series about a magical family of witches and telepaths. She also has a handful of books, the Leopard series, about a race of part human/part leopard characters.
[39] GhostWalkers Series, http://www.christinefeehan.com/ghostwalkers/index.php (accessed November 15, 2010).

issues more at home in feminist science studies and science fictions get channelled through popular paranormal romance.[40]

A key way in which Ghostwalkers reframes science and science fiction is, indeed, via its representation of the paranormal. In the novels, psychic ability is not a supernatural phenomenon, an otherworldly power, or a matter of superstitious belief; the paranormal is, as I have indicated above, natural and scientific, an innate talent and a technoscientifically enhanced "gift" and "curse" (*Shadow Game* 23). Institutionalized Western science is not challenged, but expanded, to include phenomena that conventional science has so far failed to recognize or understand. This move of explaining in natural and scientific terms what might otherwise be understood as supernatural situates the series within the paranormal mode analyzed by Traill. Thus,

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[40] As of June 2012 there are ten novels published in the Ghostwalkers series. My analysis here focuses primarily on the first novel, *Shadow Game* (2003), which foregrounds Feehan's engagement with technoscience, but many of the novel's technoscientific concerns persist as the series unfolds. Primarily, Ghostwalkers is a multi-novel popular narrative about powerful love and fictional technoscience published and received, most often but not exclusively, as commercial romance. However, I first discovered the series as science fiction. My introduction was via fourth novel *Conspiracy Game*, promoted in the "Fantasy: Paranormal" subcategory of "Sci-Fi & Fantasy" audiobooks available from distributor Audible.com. Audible also lists first novel *Shadow Game* in "Sci-Fi & Fantasy" along with the other novels in the series but some Ghostwalkers titles appear in "Romance" and "Mysteries & Thrillers" as well (www.audible.com, accessed September 13, 2011). The Jove paperback edition of *Shadow Game* I consulted marks the novel, on its spine, as "Romantic Suspense," and the audio edition is presented by "Recorded Books Romance" and "Romantic Sounds." Feehan's website (http://www.christinefeehan.com) emphasizes the series identity as romance, offering excerpts from several romance reviewers' responses to the novels. Many reviews posted to the books' listings on Amazon.com also identify them as romance. Amazon has been ranked *Shadow Game* at #52 in the "Books > Romance > Gothic" category (http://www.amazon.com/Shadow-Game-GhostWalkers-Book-1/dp/0515135968, accessed January 24, 2011); though there is little that is conventionally Gothic about the novel, the classification is interesting in terms of romance and science fiction's shared ties to the Gothic genre. The series' mixed genre classifications reflect its hybrid content and antecedents (action and suspense, sex and emotion, scientific experimentation and scientific speculation).

according to this framing, the main characters' psychic talents are part of natural reality, and heightened, not through magic, but through modern technoscience.

The series' engagement with technoscientific research recalls a familiar science-fictional threat, asserting that science devoid of human compassion is also science freed from ethical restraint. Not explicit, but hard to miss, is the gendered dimension of this critique. Technoscience, in this fictional world, is first presented as an emotionless, rational domain – and is in this sense masculine, even when practiced by a woman, female protagonist Lily Whitney of opening novel *Shadow Game*. This absence of emotion, particularly love, is tied to the scientist's capacity to do much human harm. The narrative seeks to repair this imbalance and ethical quandaries that derive from it by domesticating both science and its subjects (the scientist, the military men who are the objects of technoscientific research), exposing the non-neutrality of these terms. Through heteronormative coupling and by tying scientific practice and knowledge production to not-quite-conventional but loving kinship groups, *Shadow Game*, and to an extent, the novels that immediately follow, suggest that a domesticated, feminized technoscience is more balanced, more compassionate and more ethically responsible.

Shadow Game, set in a version of contemporary California, begins with a scene that foregrounds modern institutionalized and industrialized technoscience, dramatizing the close relationships between science, capitalism and the military, ruled under the cold logic of maximum gains. The reader's sympathies are immediately turned toward male protagonist Captain Ryland Miller, whose point of view (in third person) occupies the narration's opening pages. Ryland, like Lily Whitney, is a "paranormal," a highly-trained military man but also a test subject, caged as part of a classified research project designed to produce super-human soldiers with enhanced

psychic powers.[41] This pattern persists throughout the series: Feehan's romantic leads here are all "paranormals" – the name Feehan gives those with psychic talent – and the powers of each are enhanced in some way. They have all been experimented on by Dr. Peter Whitney – the men as military volunteers, the women as vulnerable orphaned children (see *Shadow Game* 64-69). Collectively, they construct a shared identity that reflects the characters' military roles, fraught personal histories and cyborg status; they call themselves "GhostWalkers" to mark their abilities – moving silently and invisibly through the night – but also to mark their difference and separation from ordinary humans. This name gives the series its title.

In this narrative world, parapsychology – the study of psychic forces – is a scientific reality, if one recognized by very few people, Dr. Peter Whitney key among them. Whitney, a somewhat off-balance genius in the same generic family as *Fringe*'s Walter Bishop and William Bell, has developed techniques for enhancing innate, inherited psychic talents – and reducing the barriers that constrain them – through manipulating genes and certain regions of the brain. The specific mechanisms of this process remain somewhat obscure in *Shadow Game* (with more details emerging gradually as the series progresses), a fact that is significant to the suspense/thriller side of the plot and ultimately to the narrative's portrayal of science. Psychic enhancement is Peter Whitney's pet project, and after he disappears, presumably murdered, much of the narrative momentum of the novel is directed toward discovering his scientific

[41] This eventually extends to Whitney developing another team of enhanced soldiers to serve as, basically, his own super-soldier army. The idea of super-soldiers arises in season one of *Fringe* as well, where a manuscript from a supposed terrorist group named ZFT calls for the development of super-soldiers to fight in an upcoming inter-dimensional war. In terms of this document, Olivia and the other cortexiphan test subjects are positioned as soldiers in training (see 1-17). Furthermore, much of Walter's past research, funded by the military, is revealed to be experimentation in designing high-tech super-soldiers and super weapons.

secrets, with some characters seeking financial gain and others a reversal of, or treatment for, what he has done.

Although Feehan's narration never invokes the term extra-sensory-perception (ESP), sensory perception is very much a part of her depiction of psychic talent, linking psychic abilities to autism (Feehan 116, and on her webpage).[42] Purportedly "normal" human brains – normalized that is, by numerical dominance and adaptive success – are understood to be equipped with strong filters that restrict the amount of sensory input and stimuli that an individual can perceive. Autistics and psychic adepts, so Ghostwalkers' science suggests, have fewer, inadequate, or missing filters. The primary characters of the series have had their filters further reduced as part of two scientific research programs conducted by Peter Whitney, one private and covert, involving young, orphaned female children – including his adoptive daughter Lily – the other classified but endorsed and funded by military and corporate interests, and involving highly-disciplined and trained military volunteers – Ryland and his men. (Here also, Whitney, Walter Bishop and William Bell are linked through their experimentation on children and military associations.) The Ghostwalkers characters are physically enhanced as well, through Whitney's use of genetic therapy and manipulation of the test subjects' DNA. There is some ambiguity about whether the scientist adds animal DNA to the humans' genetic codes or simply exploits the similarities between human and animal at the genetic level (see *Conspiracy Game* and *Deadly Game*), but in either case the result is not simply a cyborg subject, but a posthuman one, revealing the leakiness of the boundaries between human and technoscience but also the instabilities of humans' difference(s) from our animal kin.

[42] See http://www.christinefeehan.com/ghostwalkers/research.php, accessed July 15, 2012.

At the same time, Ghostwalkers also takes pains, as I have suggested above, to set its posthuman paranormals apart from ordinary humans. A scene in *Shadow Game* makes this explicit, as Lily Whitney (still hiding her own psychic abilities at this point) tries to explain to hostile representatives of the American military how the paranormal men differ from regular soldiers: "You have to understand, sir, paranormals are subject to and respond to different stimuli than we can sense. They live in the same world, but in a different dimension, really. …" (*Shadow Game* 120)

Although the series does not explore the significance of this other-dimensionality, this framing of paranormals highlights the issue of perception, and indicates that paranormality does not fit inside the conventional frameworks (rational, scientific, Western) to which the American military officials are accustomed. In fact, the procedures that transform the men from paranormals with potential to actual talents involve not just Western technoscientific interventions (gene and brain manipulation, drugs) but also, as Lily explains, "mind-body control techniques taught by the Zen masters" (116). This reference to Eastern mysticism features as an Orientalist, almost throwaway remark, but it points to the possibility of turning to practices and knowledges outside of orthodox Western sciences for understanding human potentiality.[43] This is further emphasized through another male character and test subject, Nicolas Trevane, who has had first a North American aboriginal and then a

[43] Of course, these appropriations of non-Western culture are familiar gestures reaching far beyond fictional representations and tapping into long histories of cultural appropriation and Orientalism. As Edward Said has argued, Orientalism is, among other things, "a cultural and political fact": "a distribution of geopolitical awareness into aesthetic, scholarly, economic, sociological, historical, and philological texts; it is an elaboration not only of a basic geographical distinction [. . .] but also of a whole series of 'interests' which [. . .] it not only creates but maintains; it is [. . .] a certain will or intention to understand, in some cases to control, manipulate, even to incorporate, what is a manifestly different [. .] world" (Said 8).

Japanese upbringing (148). Nicolas practices an effective, traditional form of healing – "mumbo jumbo, cures from the old ones" (183-184) – in a gender reversal, of sorts, of the woman healer (see Roberts 7). Though partially exoticized as non-Western in the first novel, Nicolas is hardly more exotic than any other romantic hero in the series and is further domesticated throughout the following novel, *Mind Game*. And in this context his and his romantic partner Dahlia's shared interest in Eastern philosophies and the practice of meditation are discussed in materialist rather than mystical terms, as valid empirical knowledge enhancing the characters' understanding of and ability to control their unusual powers and vulnerabilities. As with the paranormal (including telepathy and other psychic and kinetic talents), these non-Western practices and knowledges are brought within an expanded vision of Western technoscience. This situating enables the narrative's critique of science, highlighting what Western scientific knowledges and practices are seen to lack without denying that they also have much to offer.

Domesticated and Romantic Science

Another way in which Ghostwalkers reframes science and science fiction emphasizes the romantic rather than the paranormal. In many ways Ghostwalkers is conventional romance, reproducing essentialist gender roles, focusing on heterosexual love and on sexual and romantic intensity as well as the happy 'successful coupling' romantic ending, and resolving the complexities of social life and gender difference through romantic fantasy.[44] The romantic and sexual relationship between the lead characters – a heterosexual pair in each book – does dominate the plot but inextricably from the development of their subject positions (like Olivia from *Fringe*) as objects of

[44] For discussions of the popular romance genre and its conventions, see Kaler & Johnson-Kurek (eds), Krentz (ed.), Makinen (chapter 2), Modleski (*Loving with a Vengeance*, 1982, 2008), Radway, and Taylor among others.

technoscientific manipulation. The series' intermingling of the paranormal with the technoscientific explores an ethical posthuman quandary, with characters who must find ways to come to terms with their victimization within a military-industrial-technoscientific complex and to live with the un/naturalness of their not-quite-normative humanity. The powerful and exploitative technoscientific complex the protagonists must resist is strongly gendered in the novels, patriarchal and androcentric – humanist in its valorization of the white male individual (the liberal humanist subject), transhumanist in its yearning for evolutionary development beyond the limitations of ordinary human flesh. It is through such representations that Ghostwalkers enacts a critique of masculinist science, targeting (with varying degrees of accuracy) other related patriarchal institutions along the way, such as the military and the traditional nuclear family. The novels' primary answer to these problems is love: romantic love and sexual passion, yes, but also the love and support of family and kin – forged by ties of loyalty and companionship more often than blood. This emerges quickly with the series' immediate emphasis on empathy, compassion, bonds of caring and sparks of attraction.

Ryland heads a team of paranormal men with whom, at the beginning of *Shadow Game*, he is caged, and his concern for them is one of the first ideas he expresses.[45] This concern contrasts sharply with the lack of empathy expressed by the individuals in charge of the research project that has these men caged: Higgens, a military colonel, Philip Thornton, president of the corporation (Donovans) holding the military contract for this research, and Peter Whitney, the scientist conducting experiments on human

[45] See, for example, a passage of internal dialogue where Ryland asserts that he could bear his own "pain, the knives shredding his skull," but "could not ignore the guilt and anger and frustration rising like a tidal wave in him as his men suffered the consequences of his decisions" as their commanding officer (*Shadow Game* 1).

test subjects. After Higgens describes the "loss of a few men" as "tragic" but "acceptable" (6), it is not hard to believe Ryland's claim that the Colonel would be "willing to sacrifice every one of [Ryland's] men" (7) or that Donovans, where he is confined, is "about money and personal profit, not national security" (8). Higgens wants "results" (7) and it eventually becomes clear that Thornton follows his lead (194-195). Of the three, only Peter Whitney appears to have the potential for compassion. He protests at the men's suffering and the loss of life, and yet this compassion lacks force, as he gives way, as he clearly has in the past, when Higgens insists the project must continue (6).

As scientists, both Peter Whitney and his adoptive daughter Lily are initially portrayed as rational, emotionally detached individuals. They get lost in their work (*Shadow Game* 21), avoid romantic connections (25), and approach scientific investigation with a cool thirst for knowledge (95-97). A brilliant male doctor who appears later in the first novel is similarly depicted as interested in little else but medical and scientific knowledge (206), and most scientific and/or medical persons Feehan brings into the series (in mostly bit parts) reiterate this character type: these individuals are portrayed as analytically inquisitive, enacting a medical/scientific gaze, occasionally with sinister and/or power-abusing intent (such as Dr. Prauder in *Deadly Game*).

Yet, unlike Higgens and Thornton, who have no apparent romantic or family connections, both Peter and Lily seem to be softened by their domestic ties – a small and diverse constructed family made up of Lily's motherly Hispanic nurse, and now housekeeper, Rosa Cabreros; a homosexual chauffeur, John Brimslow (and his now-deceased partner, Harold); and surrogate uncle and head-of-security, Arly Baker. John is described as Peter's long-time, perhaps only, friend (133), a connection the scientist

"needed … to keep him human" (136), but it was Lily, as a child, who taught Peter how to love, the narration tells us (64-67, 133, 234). This love counteracts, to some extent, the failure of Peter's blood relations to nurture him during his childhood, where he himself was little more than an "experiment" to breed and raise "a child of great intelligence" (133). Whitney, we later learn, has made such experimentation a driving principle of his life – to the point of madness, suggests fifth novel *Deadly Game* – but Lily is a source of vulnerability in the scientist's performance of cold objectivity, and in the first novel, at least, their father-daughter bond appears to be his salvation.

Peter Whitney has ostensibly constructed this little slightly unorthodox household, an informal kinship group and replacement for the standard nuclear and extended family, in an effort to give Lily the emotional support he never had. And we might assume that her more ready capacity for compassion is the result. Or is it her gender? Lily comes to represent the ideal scientist in *Shadow Game* because she combines 'masculine' logic with a 'feminine' capacity for caring, and this fusion of the masculine and feminine, or perhaps, feminization of the conventionally masculine, provides the model for all the female GhostWalkers leads. Lily's scientific rigor and compassion are emphasized early in the series, as is her gender. She enters the scene as a source of physical and emotional relief as well as attraction for Ryland, easing the sensory stimuli bombarding his now extra-sensitive brain (*Shadow Game* 4). We later learn that she is an "anchor," a paranormal type who can provide relief to his or her more vulnerable counterparts, drawing off overwhelming sounds, emotions, and energy or providing some shielding protection. This comforting role is not restricted to the female characters but, with the men, takes on a more protective (masculine) quality. Lily is not pure compassion; she is introduced as "Dr.," an "intelligent" and

"knowledgeable" scientist called in to consult on the research data. But she is also seen as a threat by Higgens because of her potentially "bleeding heart" (*Shadow Game* 4-7). These caring traits are intensified as Lily's character develops over the course of the narrative, figuring out the details of her father's research after he disappears, helping the men he has experimented on – literally bringing her work into the domestic space by inviting her father's test subjects into her home – and, in the process, learning how to love. Lily's counterparts in the following novels are similarly skilled and/or knowledgeable in scientific, technical and, in some cases, physical domains, representing a fusion, rather than erasure, of gendered traits.

Family and domesticity are brought to the fore, in some sense, for all the sympathetic characters in *Shadow Game*, including Ryland's team of military men – also test subjects in Peter Whitney's research project. The importance of family remains a constant theme throughout the series, although, repeatedly, 'true' family is not only about blood ties but also bonds of affinity and loyalty (what "mythic fantasy" author Charles de Lint often writes about and refers to as "family of choice"). For Ryland, it is his relationship with his deceased mother that the narrative first emphasizes, and he talks to Lily of his loving relationship with her several times, with a "smile in his voice that told her he adored his mother" (*Shadow Game* 102). The other men speak fondly of family as well, and mothers or mother figures, featured most prominently in *Shadow Game* and *Night Game*, are usually portrayed in a positive light. Ryland's military team also takes on traits of a kinship group, with Ryland as patriarchal father figure and his men as brothers, even "children" (301, 309). The only other military man who engenders any sympathy, a General Ranier, is a happily married man, and although he has no living children he views Lily as a daughter (248). Lily is, in fact, surrounded by

surrogate family, what John calls a "family of misfits," "built … around" her (133), with Ryland and his team becoming part of that group.[46] This family grows and extends as the series progresses, as we meet more military volunteers to Whitney's enhancement program, as Lily and her team find other girls who were part of the scientist's early experiments, and as the newly formed couples begin to conceive children of their own. The heteronormative nuclear and extended family structure is expanded rather than deconstructed in this scenario – the standard roles are left mostly intact[47] – but kinship is, significantly, determined by both blood and association, nature and design. Family is emphasized as extremely important to the characters' well-being and, in *Shadow Game* particularly, to compassionate science, and it is the union of domesticity and science – a reimagining that positions the domestic as necessary to science and scientific ethics – that eventually makes the novel's happy ending possible. Narrative resolution, and the successful articulation of genre convention, rely on the 'feminizing' of science.

Compassion and empathy are not distributed in *Shadow Game* strictly according to biological sex, as Ryland's feeling for his men indicates; however, they are, implicitly, gendered. And that gendering enacts a critique, beyond the domain of science, of extreme masculinity untempered by femininity and domesticity – a critique that persists as the series progresses: in later novels, institutionalized, militarized,

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[46] As Susan Fast reminded me, some aspects of this reimagining of family bonds may resonate with recent concepts of "queer kinship." In this technoscientific narrative and with the main characters' cyborg status, this family collective may further represent a "queer family" in the sense that Donna Haraway has described as "neither nature, nor culture, but an interface" – a kin group of entities (such as cyborgs and trickster coyotes) that require categorical confusion (*Haraway Reader* 332). As I note below, however, there is still a strong heteronormative impulse at work here.

[47] Gender role representations in romance have been of particular interest to several critics. Sandra Booth, for example, finds that paranormal romances are conservative and regressive in terms of the gender relations depicted; Lee Tobin-McClain suggests that the reality is more mixed.

masculinized, and hence, unethical technoscientific agents remain a threat to the development and sustainment of new family and romantic bonds. Highlighting an imbalance in science (and, to an extent, in the military and the corporation), the narrative corrects it, domesticating what can be saved (in *Shadow Game*, science and the military and corporation as institutions) and excising what cannot be redeemed (both Higgens and Thornton are exposed as criminal and removed from the scene). *Shadow Game* enacts a parallel reframing here: science is revised and improved by the feminine and the domestic, and both science and science fiction are revised (and, perhaps, intended to be improved?) by the generic frames of popular romance.

The Technoscience of Love

I suggested earlier that *Shadow Game* is ambiguous about whether it is Lily's family or her gender (her "innate" femininity) that facilitates her capacity to be the compassionate scientist. But there are other possibilities. For instance, most of the caring characters in the Ghostwalkers series are paranormals – their psychic talents make them sensitive to others' emotional energy, which suggests that they have a higher capacity for empathy than other people. And this sensitivity makes them suffer. In *Fringe*, emotion is similarly linked with paranormal ability – a point I will return to shortly. However, it's clear that even if paranormal ability gives one the potential for empathy and compassion it does not guarantee them: the GhostWalkers protagonists come up against several similarly talented and enhanced characters who show themselves to be sadistic and cruel. So it can't be entirely Lily's paranormal talent that enables her compassion. In Ghostwalkers empathy and compassion are triggered and enhanced by the arrival of love; however, like the lead characters' talents, romantic love

and sexual attraction may be the result of technoscientific manipulation, another indication of their cyborg and posthuman status.

One of the ways in which women, writing explicitly feminist fiction or not, have subverted the science fiction genre is through a persistent concern with the social and emotional dimensions of human (and non-human) relationships. Women writers of scientific fiction seem less afraid to talk about love. Perhaps the genre creates a space where women can imagine and explore the erotic and romantic possibilities of female subjectivity, as Sarah Lefanu suggests, depicting sexual relationships "as non-exploitative, non-possessive, non-monogamous, and strongly combined with friendship" or with lovers who are aliens, robots or cyborgs, rather than ordinary human men (Lefanu 76-77). At the same time, the often-tragic end of such romances in feminist science fiction may indicate a critique of the idea and desirability of "romantic love itself" (Lefanu 78).

More recent feminist sf, according to Jenny Wolmark, combines the "codes and conventions" of science fiction and popular romance – using what may be the most feminine of genres to influence one of the "most masculinist" (230-231). Wolmark argues that feminist sf "crosses the boundaries of gender and genre," taking up "fantasies of female pleasure and power" from popular romance while "using the 'hard science' metaphor of the cyborg to redefine definitions of female subjectivity" ("Postmodern Romances" 230). Through the metaphor of the cyborg subject (as pioneered by Donna Haraway) and its narrative literalization, feminist sf can explore female desire while transgressing masculine/feminine boundaries, subverting the fixed binaries and boundaries of male and female, culture and nature, and enabling feminist sf writers to expose and destabilize the masculine grip on technoscientific power and

cybernetic systems (232). Further, Wolmark argues, "by challenging the masculinist hegemony over technology, the cyborg disrupts the generic stability of science fiction itself, since the genre has largely been built around the unquestioned assumption of that hegemony" (232).[48]

Just as the Ghostwalkers novels are not explicitly feminist,[49] the cyborg subjectivity the story imagines doesn't directly engage with critical and theoretical models of cyborg subjects. Nevertheless, the narratives' technoscientifically-altered "paranormal" characters do experience a kind of cyborg status, and positioned as 'abnormal', their relationship to concepts of nature and to technoscience highlights the hegemony of a purportedly 'natural' norm and the intervention of technoscience into human lives. Paranormals are depicted as *not* normal: they have difficulty living in the

[48] Not that cyborgs are inherently feminist. Cyborgs have their own aggressive masculinist history in the military industrial complex, as Haraway pointed out when she first suggested using the figure to destabilize binaries of gender, and between nature and machine (Haraway, *Simians*). But lacking any natural birth or birthright, the cyborg can turn away from its makers and, to an extent, has become an experiential reality in our technology-ubiquitous, technology-reliant cultures and economies. Identity and subjectivity can never be innocent and pure and the cyborg acknowledges the contemporary reality of that fact.

[49] Some readers, as well as perhaps Feehan herself, would consider a novel like *Shadow Game*, which features a brilliant female scientist, or like *Deadly Game*, which stars an ass-kicking female soldier, to be feminist on some level – a demonstration of female empowerment – although this is pure hypothesis, as the reception of Feehan's novels as feminist or not has not been part of my analysis. The differences and disagreements between intellectual and popular feminisms are too numerous to address adequately here and might be the grounds of an entirely different project altogether. However, it is worth reiterating some aspect of the debate. For instance, in her study on the reception of romance novels, Radway has argued that readers and authors may negotiate potential conflicts between their own "incipient feminism" and the romance genre's "traditionalism," by "interpret[ing] these stories as chronicles of female triumph" (54). In a related vein, Modleski has argued that whether the results are pleasing to modern feminists or not (often not), "contemporary mass-produced narratives for women contain elements of protest and resistance underneath highly 'orthodox' plots" (*Loving* 16). Similar debates circulate in studies of the relationships between girl culture and popular media, and girls and popular music (see, for instance Susan Douglas, *Where the Girls Are*; Jacqueline Warwick, *Girl Groups, Girl Culture*; Melanie Lowe, "'Tween' Scene: Resistance within the Mainstream").

ordinary world, suffering from sensory overload caused primarily by the emotional and sonic noise of the people around them.[50] And the characters themselves often view their talent as some kind of "flaw" (see, for instance, *Shadow Game* 179). These paranormals are all 'natural' talents, born with (presumably inherited) psychic powers of various kinds, but they are also genetically and chemically 'enhanced' subjects of technoscientific experimentation, so that their bodies and identities are hybrids of nature and technoscience, human and posthuman, animal and a kind of machine. The science that underlies their making is also hybrid, a mix of conventional authoritative Western science and what is often called "pseudoscience" but also non-Western conceptions of spirit, matter and humans' relationship with the world.

They are also men and women in love. *Shadow Game*, for example, asserts its identity as heteronormative romance fiction repeatedly and persistently: Lily and Ryland talk about their attraction frequently and express it nearly as often through multiple, fairly graphic sex scenes. In fact, the prevalence of sex scenes in the novel, interrupting the technoscientific suspense plot, is an issue raised in several informal online reviews of *Shadow Game*, such as those posted on Amazon.com.[51] One might even speculate that Feehan felt the impulse to overdo the sex and romance to counteract any potential or perceived 'unsexiness' in the technoscience, even to eroticize

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[50] Here is another parallel with *Fringe*. Olivia is the most well-adapted of Walter's cortexiphan test subjects. Other cortexiphan children, such as Nick Lane, have much difficulty living normally, with Lane, for instance spending many years in a psychiatric hospital (see "Bad Dreams" 1-17). Even Olivia speculates that the experimentation has changed her to the point where she can't have normal human relationships, although her growing intimacy with Peter changes this.

[51] One example: "My problem with this book wasn't so much the Ghost walker, psychic, telekinesis, military plot. My problem was there was way too much sexual innuendos and sex" (http://www.amazon.com/Shadow-Game-GhostWalkers-Book-1/dp/0515135968, accessed January 24, 2011).

technoscience, when the sex scenes take place telepathically.[52] Regardless of the reason, this pattern of man–woman interaction, the overwhelming attraction between the paired leads, their attempts to resist or give way to desire, to make sense of it and how it's wound up with love – these are recurring plot elements in each of the Ghostwalkers novels. Nevertheless, however much ethical, social and personal concerns about science and technology are subordinated to episodes featuring intense attraction and passionate sex, the ongoing narrative could not proceed without its science-fictional undergirding. As paranormal romance, this tale may be too romantic to sit comfortably in the midst of orthodox science fiction, but it takes on some of the work that science fiction tends to do.

However unsexy technology may or may not be, and however much the series emphasizes sex and love, technoscientific possibility lies at the heart of Lily and Ryland's relationship, and this is the case for the other heteronormative romantic leads as well. Psychic enhancement and subjection to the scientific quest for knowledge is not just a commonality between the men and women but possibly also the source of their emotional and physical connection. Appropriately for the romance genre, the attraction between Lily and Ryland, and the other pairs as well, is intense and irresistible – as romance critics such as Linda Lee have noted, "destined romantic partners" are prevalent in paranormal romance (58). Uncharacteristically, in the Ghostwalkers series we repeatedly face the likelihood that this attraction is genetically engineered.[53]

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[52] Counter to assertions of technoscience's gender-neutrality, there is, of course, also a tradition of technoeroticism in popular culture, as Claudia Springer demonstrates through the analysis of science fiction film and literature in *Electronic Eros*.

[53] Heather Schell's analysis of male werewolves in Hollywood cinema and paranormal romance (including another novel of Feehan's – *Dark Magic*, 2000) finds expressions of popular discourses about genetics and evolutionary psychology even where explicit references to genes and DNA are absent, particularly in recent representations of

In *Shadow Game*, the possibility of engineered attraction is raised, usually by Lily, in conversations between the two lovers several times during the novel. Their connection seems too powerful and too overwhelming to be natural, so they speculate that Whitney in some way manipulated their feelings, constructing their mutual attraction through technoscientific intervention.[54] Within the narrative this possibility seems only faintly far-fetched, but as the series progresses, and male and female test subjects are paired off with each book, it becomes increasingly more probable, and eventually near-certain, that Peter Whitney somehow engineered the connections between them. 'Something to do with pheromones,' seems to be the general conclusion. A hint to Whitney's less-than-innocent intentions emerges in *Shadow Game* when in an early lab recording he exposes his interest in the young girls someday producing superhuman offspring (231), and his hopes may be on their way to fulfillment when first Lily and Ryland (in *Night Game*), and then Briony and Jack (in *Conspiracy Game*) conceive offspring.[55] In the following book, *Deadly Game*, suspicions and theories about Whitney's sinister interest in reproduction are confirmed, when a covert "breeding program," based on his capacity for attuning his test subjects to each other, is revealed

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werewolves as alpha males, explaining their "atavistic" traits through "genetic inheritance or mutation" (120). More on this in the coming chapters.

[54] In one such dialogue, Lily asks Ryland, "Have you even bothered to wonder why we're so connected? It isn't natural"; Ryland replies, "It feels natural" (44). Lily insists he consider the possibility, and he does admit to himself that his attraction to her goes "far beyond anything he had ever experienced" (45). The uncertainty persists as Lily speculates that there is a connection between their talents and their responses to each other: "We're attracted and somehow our special gifts enhance what we're feeling" (46), adding to herself, "Couldn't he see the chemistry between them had to be artificial? Enhanced in some way, the way his psychic abilities had been enhanced?" (49).

[55] A similar concept shows up in season three of *Fringe*. Peter impregnates "Fauxlivia," the Olivia from the alternate Earth, thinking she is "his" Olivia. The baby boy is viewed as a technoscientific weapon of sorts until a shift in timelines erases him from the narrative. However, at the end of season four (4-22), "our" Olivia announces her own pregnancy, once again with Peter as the father. We might assume this child is likely to grow up to be the Etta we meet in a future-set previous episode (4-19).

to be an actuality. The successful uniting of each enhanced couple is a testament to the success of Whitney's experimental designs. And yet…

Shadow Game concludes on Lily and Ryland's wedding day, providing the happy ending the romance genre requires. (Weddings don't actually appear in the series, but we hear in subsequent novels about pairs of lovers getting married off after their particular tale is over.) Yet, despite the romantic resolution that each narrative works toward, along the way, the repeated implication and growing certainty that the lead couples' feelings for each other have been technoscientifically enhanced raises anxieties about the natural integrity and trustworthiness – the truth – of sexual attraction and love. In an attempt to deal with feelings of being manipulated, several lovers tell themselves and/or each other that Whitney might be able to engineer their sexual attraction but not their love, the way they so quickly come to care for each other so deeply. But ultimately, the characters' unions and marriages assert a claim, voiced earlier by Ryland, that true love and passion transcend their origins: the experienced reality of emotional and physical attraction (and, as I suggested, there is some attempt, in the novel to distinguish the two) overrides any uncertainties about where such feelings came from or how they came to be (whether natural or constructed). As Ryland asks, "What difference would it make?" (*Shadow Game* 174). 'Felt' emotional truth is all the truth they need.[56] The nature/technology binary is brought to the surface here and never fully resolved.

[56] Apparently not all readers are as easily satisfied. One example from Amazon.com's page for the novel: "If you ask me there was no love in this book[,] only lust, [obsession,] and an infatuation which led to maybe a quasi-love but, even in the end, I wasn't convinced the main characters were truly 'in love'" (http://www.amazon.com/Shadow-Game-GhostWalkers-Book-1/dp/0515135968, accessed January 24, 2011).

Cultural Confusion and the Power of Love

To be clear, I am not interested in Feehan's work here for the quality of the writing or even because I enjoy the novels, which vary in their achievement. It is not literary merit but popular appeal that draws me uneasily to them and makes me want to better understand the material-discursive work the GhostWalkers stories do. At times I find the plot and narrative twists illogical or hard to swallow, Feehan's characters too flat, and their syrupy/steamy relationships – rife with regressive gender stereotypes – frustrating, even anger provoking. Yet there is still something compelling about the series' persistence in situating 'hot and heavy' romance within a critique of masculinist and patriarchal technoscience, and its insistence on the scientificity of phenomena firmly beyond (excluded from) Western scientific norms. Science, speculation and love. Science fiction and romance. Judging by the series' popularity – numerous favourable online reviews, appearances on award nominations and bestseller lists – the novels clearly work for many readers.[57]

The Ghostwalkers series' preoccupation with the paranormal and the technoscientific (particularly gene manipulation) and their implications, brings the narrative within the discursive spaces of speculative fiction. And with technoscience integral to and inextricable from character and plot, Ghostwalkers brings science, and science fiction, into the frame of the popular paranormal romance. The narrative calls for a more cooperative, balanced relationship between logic and feeling, and masculine and feminine – a proposition that roughly corresponds with Feehan's description of the series as featuring "strong heroines and wonderful heroes who must work together as

[57] See Feehan's site for a lengthy listing and favourable review excerpts (http://www.christinefeehan.com/shadow_game/index.php, accessed on January 24, 2011).

equal partners, both bringing their strengths and abilities together in order to survive."[58] Although these works do not deconstruct the masculine/feminine binary, they do redistribute masculine and feminine qualities (such as physical skill and strength, logic, vulnerability, and compassion) to both male and female characters, stretching the capacity of normative gender roles if not rejecting them all together. By taking up the concerns of science fiction within the framework of romance, Ghostwalkers views science, technology, nature and the human along another line of sight, from the perspective of a feminized mass cultural form. The series is one among many possible reminders that in our science-fictional contemporary, engagement with the quandaries posed by advanced technoscience happens across the borders of science fiction as well as within.[59]

By reframing *Shadow Game* and its sequels in relation to science fiction I am trying to look at the way science-fictional concerns reach beyond sf "proper," not just into literary and theoretical appropriations but also into other intersecting popular genres – frameworks with generic affinities. Feehan's Ghostwalkers series is not explicitly or intellectually feminist, it is not 'correct' science fiction, nor is it a combination of the two. But the series does engage with the same contemporary

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[58] See the GhostWalkers web page (http://www.christinefeehan.com/ghostwalkers/index.php, accessed March 14, 2011). In the final episode of season four, *Fringe* offers a similar argument for male–female cooperation. Attempting to stop the collapse of the two universes, initiated by William Bell, Olivia and Peter must join forces to reach Bell: Peter, having been born in a version of the other universe, can see Bell's headquarters that have shifted to the other side, while Olivia, with her world-crossing powers, is the only one who can take them there. The two hold hands as Olivia powers the jump and Peter points the way (4-22). They are also complementary in a brains (Peter) and brawn (Olivia) sense, as Peter is uber-intelligent and Olivia, as an FBI agent, is a skilled and trained fighter.

[59] Istvan Csicsery-Ronay, Jr's concept of *science-fictionality* (2-3) might be invoked here to illuminate this kind of cross-genre congress, although I do not imagine he had paranormal romance in mind. More to follow.

technoscientific and gendered reality explored by much feminist criticism and science fiction, and these novels articulate common ideas about that reality as they circulate in a broader popular and public imaginative, at least one populated by thousands of paranormal romance readers and writers.

Furthermore, in a faint suggestion of kinship with the characters of feminist science fiction, Feehan's paranormals – as products of nature, technoscientific experimentation, and Zen training – do experience a kind of posthumanist cyborg subjectivity. These uneasy representatives of what the posthuman might be – Lily, Ryland and their makeshift extended family – attempt to create a utopian-inflected space for themselves in Lily's protected mansion and grounds, a "sanctuary" (*Shadow Game* 23) for the woman and her chosen kin, a "home" (299). This home becomes a kind of separatist utopian enclave where the paranormals and other misfits can withdraw from the threats and sensory overloads pervading the often hostile, often masculinist spaces outside. And though not all the characters choose to settle in this enclave, those who don't seem dedicated to setting up enclaves of their own, branching off to set up new family households without cutting off connections to the maternal home.

In a simplistic but significant way, the narrative tensions in the Ghostwalkers series apprehend and point to a need and a potential for broader social/cultural transformation. But this is not an intellectual, conscious, or self-reflexive interrogation of institutional technoscience or the military-industrial-technoscientific complex. In fact, some of this critique loses its steam in subsequent novels, as Peter Whitney, having faked his death, takes on the role of primary villain and his loving relationship with Lily and capacity for compassion are called into question. Additionally, the frequent demonization of military and corporate science in popular culture may indicate a

position that, through its ubiquity, is more a gesture to narrative convention than a sincere challenge to contemporary power relations.[60] Still, the engagement with technoscience and with genre in Ghostwalkers, though too blunt perhaps to be a fully considered critique, is too pointed to serve as merely an empty gesture.

I read Feehan's romantic series 'grounded in science' (as she terms it) as an articulation of discomfort with certain cultural tensions and contradictions arising from the place of modern Western science and scientific authority, with all its masculinist, patriarchal and Western biases, in contemporary North American society. *Shadow Game* and its fellows attempt to resolve these contradictions in the contained and formulaic space of popular romantic narrative. The Ghostwalkers series reframes science and science fiction to bring them into a utopian romantic space – where science is domesticated and love is a felt truth transcending the natural/constructed binary. Exploiting the porous lines between popular genres, these novels (and others like them) circulate across the boundaries of paranormal romance and science fiction and, through their engagement with contemporary technoscientific reality, highlight both the limitations and possibilities of the popular public imagination.

Despite differences in media, authorship, audience and distribution, romance, like the paranormal, fulfills a similar function in *Fringe*. Representations of paranormal phenomena such as those we see on a show like *Fringe* situate the paranormal, by way of fringe science, at the limits of conventional human scientific knowledge, but also conventional human identity and being. Hence the paranormal can figure here as a kind of scientific signpost toward the posthuman, as ambivalent as the promised transformation might be. Such limit cases, human petri dishes of paranormal

[60] This issue was raised in a paper on the *Resident Evil* film series presented by Sheryl Hamilton at the International Conference on the Fantastic in the Arts in 2011.

posthuman potential, may have difficulty adjusting to the conventional North American sociocultural norm. Attempts to "guide" human evolution may generate monstrous anomalies. But the paranormal and technoscientific possibilities enabling these transformations and attempts can also create narrative perplexities, which I read as a metaphoric indications of broader cultural confusion about the limits of science, of human being, and the relationship between the two.

Popular media, as I have discussed, exhibit ambivalence toward the scientific rationalization of the unknown and the difficulty of comprehending what science already claims to understand and theorize. In Ghostwalkers this ambivalence manifests most strongly in the paranormals' difficulty functioning in and assimilating into normal society.[61] In *Fringe*, such confusion shows up in the complexity of its setting – crossing between multiple worlds, jumping through time, and even rewriting and merging timelines. By the end of the fourth season, it's hard to keep track of what has and now has not happened, what the characters can possibly be expected to recall, and how worlds and timelines are intertwined. In this context, knowledge and memory become slippery things. Walter, for example, is literally missing a piece of his brain, which he long ago chose to have surgically removed, and between that and his subsequent mental illness, his memory is often hit or miss. Olivia has little recollection of the period when she was Walter and William Bell's test subject. And the issue becomes even more complex in season four, after Walter's son Peter is temporarily erased from the timeline, causing a rewriting of past events. When he returns Peter now has a history he shares with no one else, except that is, for Olivia, who begins to lose her memory of the current

[61] In *Conspiracy Game*, for instance, Briony's adoptive family persistently refuses to acknowledge her paranormal sensitivities as such as long as possible, preferring to believe she is physically and psychologically weak and emotionally distant, medicalizing her difference.

timeline and remember her history in the other timeline with, and even before, Peter. With a few extra doses of cortexiphan (administered without her knowledge or consent), the Olivia of one timeline dissolves into the Olivia from another.

Fringe, then, aligns the limits of the human with confusion via the intermingling of worlds and timelines, and gaps in people's memories. But the most powerful cause of chaos and confusion in the series is emotion.[62] Here, love functions not as the ethical corrective to patriarchal technoscience but as the element of uncertainty that destabilizes hyper-logical attempts at technoscientific rationalization. *Fringe*'s fascination with, even awe of, emotion marks a sense of ambivalence about how the terms of the reason/emotion binary play out in "modern" society. Walter identifies emotion as a means of heightening human awareness and increasing one's receptiveness to paranormal phenomena; he tells Olivia that "acute emotion" can (with the help of drugs) "open the mind, as it were" ("Jacksonville," 2-15).[63] Fear is one strong source of paranormal awakening, but throughout the series, love proves to be an even more powerful force. It is love (for his son Peter) that causes Walter to first open a bridge between worlds, bringing the two parallel realities into chaotic and dangerous interaction. And, as Massive Dynamic's chief operating officer Nina Sharp tells Olivia: "it was your capacity for feeling that made William and Walter so sure that you were the perfect candidate for the [cortexiphan] trials" – Olivia's "compassion" makes her a source of great power (4-22). In season four, it becomes increasingly clear that intense love has a kind of material power, even to the point of changing reality – bringing

[62] Thomas discusses chaos in the series, but not directly linked to emotion, and focuses on the scientist's grief, and hence human frailty, as a threat to the safe exercise of power.

[63] In Ghostwalkers heightened emotions can also be a trigger of the manifestation of paranormal abilities, even when those emotions are those of others – sensed by rather originating with the paranormal characters.

Bishop's son Peter into a timeline from which he had vanished and enabling Olivia to become the version of herself that he had known and loved before. This is made explicit in an episode called "A Short Story About Love" (4-15). In a near-final scene, Peter, seemingly stranded in the wrong timeline and away from the Olivia he loves, asks one of the Observers for help – he wants to return home. The Observer, named September, tells Peter that he has always been home but that *how* this can be "defies scientific explanation." September offers a theory, "based on an uniquely human principle": "I believe you call it love," he says (4-15). Here we learn that it is not the paranormal, but love, that defies scientific explanation.

Science Fiction, Feminism, Scientific Margins and Love

Earlier I pointed out that Christine Feehan is not a feminist science fiction writer. Nor is *Fringe* a feminist science fiction TV series although, as may be the case with Feehan's readers, *Fringe* viewers might read its complex female lead and assertions of her importance and strength (paranormal and otherwise) as markers of female empowerment. Despite the 'pop' rather than intellectual or activist feminism in these narrative series, their shared concern with the intersections between science's orthodoxies and margins, with the human and the not-quite-human, and with emotion, bring their engagement with the cultural imaginary into conversation with feminist science fiction. These are distinct but not entirely separate worlds.

If modern science has been constituted as masculine, science fiction has, as I suggested earlier, followed a similarly gendered path.[64] Identifying important female

[64] This is an ethnocentric path as well, where emphases on white Anglophone authors and audiences have, historically, obscured the production and consumption of sf by and for other cultural collectives. This is starting to change, with critical translations of non-English science fiction texts and critical analyses of sf produced outside of the white

science fiction authors has often been, until recently, a process of rediscovery and counterhistory.[65] It's not that there aren't women and people of colour writing and reading science fiction. As Sarah Lefanu notes, women "like C.L. Moore and Leigh Brackett" wrote sf even in the genre's pulp "heyday" (2). It's just that the genre hasn't been perceived to be the 'natural' narrative home for anyone whose identity falls outside the supposedly 'unmarked' white heterosexual male. Until, and indeed beyond, the development of an overtly feminist science fiction in the 1970s, "women's participation" in the genre as readers and writers "necessitated becoming one of the boys" (2).[66] Alice Sheldon's years long masquerade as male writer James Tiptree, Jr. is a particularly poignant and successful case of such gendered role-playing, and her ability to compose what was seen as decidedly 'masculine' sf is both a testament to and an upsetting of the gendered discourses in and around the genre (see Lefanu 105-129).

Feminist science fiction is itself an exercise in genre blending and cross-genre appropriations, contributing to our understanding of what counts as canonical sf even

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Anglo mainstream. Recent critical work has extended to interrogations of race and colonialism as well, both in fiction and in criticism, studies such as *Afro-Future Females: Black Writers Chart Science Fiction's Newest New-Wave Trajectory*, edited by Marleen S. Barr (2008); *Race in American Science Fiction* by Isiah Lavender, III (2011); *Colonialism and the Emergence of Science Fiction* by John Rieder (2008); *Science Fiction, Imperialism and the Third World: Essays on Postcolonial Literature and Film*, edited by Ericka Hoagland, Reema Sarwal, and Andy Sawyer (2010); *The Postnational Fantasy: Postcolonialism, Cosmopolitics and Science Fiction*, edited by Masood Ashraf Raja, Jason W. Ellis, and Swaralipi Nandi (2011); and *Postcolonialism and Science Fiction* by Jessica Langer (2011). One of the key insights that emerges from this growing body of criticism, I would argue, is that the critique of Western patriarchal science in feminist and postcolonial science fiction is tied up with how the authors take up and manipulate conventions of the science fiction genre. Critiques of authority, identity, and genre are intertwined.

[65] Pamela Sargent's *Women of Wonder* anthologies of female science fiction writers are important works in this area, as is *Future Females: A Critical Anthology*, edited by Marleen Barr.

[66] The same is often said of strong female characters in science fiction, that their strength derives from becoming one of the boys or, alternately, taking up the essentialist role of dangerous protective mother.

as it calls that canon and its conventions into question. This postmodern relationship to genre underlies Lefanu's pioneering monograph on feminist science fiction, even if she doesn't address the issue directly. What Lefanu does address is the imaginative space and tactics that "science fiction *allows*" (21), in ways that highlight its generic congress with fantasy, romance and Gothic fiction and the provisionality of the lines between them. "By borrowing from other literary forms [science fiction] lets writers defamiliarise the familiar, and make familiar the new and strange," she writes (21). The "subversive potential" that Rosemary Jackson sees in fantasy (see *Fantasy: The Literature of Subversion*), Lefanu finds in science fiction: "its interrogation of unitary ways of seeing, its tendency towards the dissolution of structures and its open-endedness" (22). Upon this shared ground of subversive potential Lefanu is able to group authors like Tanith Lee, Angela Carter, Joanna Russ and Monique Wittig, collectively, as science fiction – with tendrils stretching into fantasy, "traditions of romance fiction" and "the female Gothic tradition," and with a genealogy stretching back to Mary Shelley's *Frankenstein* (22-23). According to such genre definitions (which are not exclusive to feminist criticism), science fiction was hybrid from the start.

Characters with paranormal abilities, particularly those whose abilities are enhanced by technoscientific intervention, represent another kind of hybridity – another thread linking feminist science fiction with popular paranormal and posthumanist science fiction, where feminist appropriations of the paranormal and cyborg subjectivity might meet. Such representations enact a kind of speculation about what changes to the human might be entailed in the development of posthuman sciences and a kind of negotiation over what kinds of knowledge and practice such sciences might include. Further, such imaginative figurations, including sf's persistent

interest in so-called "pseudoscientific" phenomena in a genre often viewed as a popular vehicle for scientific education (as the "lesson plans" on the *Fringe* website further underline, or Feehan's interest in grounding her Ghostwalkers series in science), point to science fiction's function as a boundary zone where genre conventions but also legitimate and illegitimate sciences meet, overlap, and even begin to blur. Apprehending some of the flaws and limitations of contemporary science, series like Ghostwalkers and *Fringe* very determinedly occupy this borderland, situating their representations of posthuman science at the border zone between legitimate and "quack" science, close to the leading edge, but by way of science fiction, pointing beyond that edge to where science may take us in the future.

Tensions between the paranormal and the scientific are bound up in broader processes of Western scientific legitimation. Roger Luckhurst, drawing on science and technology studies for his analysis of science fiction's place in this milieu, notes that the term "pseudoscience" itself is part of these legitimating processes. The label "pseudoscience" represents an attempt at blocking or erasing the record of border instability between science and non-science: "those passages of history where the boundaries between science and its others are impossible to determine, where experiments are leaky or inconclusive or where expertise proved difficult to police ("Pseudoscience" 405). In this sense, and following Foucauldian genealogical criticism, practices and knowings labelled pseudoscience can be seen to represent "subjugated knowledges," as science and technology studies scholars such as Steven Shapin, Harry Collins, and Trevor Pinch have demonstrated (405-406), as have numerous feminist science studies scholars such as Evelyn Fox Keller, Donna Haraway, Sandra Harding, and Helen Longino. Hence Luckhurst prefers the phrasing suggested by science

historian Seymour Mauskopf (1990): "marginal sciences" (405) to refer to the scientific knowings that orthodox science has striven to exclude.

In this context, science fiction can be seen as "the cultural record of these multiple, speculative possibilities" (404-405), of "proleptic knowledges" (408) – the sciences that might have been or might yet be. Examining the historical relationship between orthodox and marginal sciences allows us to see that science is not a fixed and homogenous institution but is, rather, "a process of creating *heterogeneous assemblages* that inevitably breach any sense of a strict quarantine between the inside and outside of scientific practice" (407). And science fiction, Luckhurst argues, occupies and records the "interstitial" regions where the negotiation of inside and outside is most uncertain, functioning as "an element in a heterogeneous assemblage, a hybrid form that loops together the material of science with mass cultural narrative, making it a fascinating social locus of conflict, cross-fertilization, and negotiation" (408). Thus sf can be reframed not in terms of scientific and unscientific, legitimate or fantasmatic, but as "a kind of historical trace," speculation about possible dramatic cultural transformations (408), and a potential imaginative influence on "the parameters of actual scientific research, perhaps most intensively when the boundaries of the human are thrown into flux" (404). This boundary fluidity is not only about what humans can and should know; it's also about what kind of human can be the subject of such knowledge.

In an essay on popular conceptions of the posthuman, Myra J. Seaman suggests that, in the face of posthuman challenges to human identity, we often imagine affect and emotion to be the most important and most enduring human characteristics. The premise here is that whatever technoscientific changes may transform our bodies and minds, we will remain essentially human as long as we can feel, and love. This seems to

be the case with media texts such as *Fringe* and Ghostwalkers. In these series, the posthuman, by way of the paranormal reframed as science, represents a challenge to current human conventions and conceptions of embodiment, identity, and understanding. Yet, as the Observer September theorizes, love may hold a "uniquely human" power that transcends rational scientific explanation, overriding any transformative posthuman threat. Ultimately, such representations suggest, love may be the strangest paranormal power of all, exploding the limits of known scientific reality. The ideal subject of expanded scientific knowledge, here, is a loving one.

CHAPTER 2: Framing Understanding: Genre Impurities and Science/Fictional Worlds[67]

Our World Is Science-Fictional

We are living in a science-fictional world. Or, to put it slightly differently, we are living in several overlapping and interpenetrating worlds where, for many of us, science fiction seems to infuse the everyday. As Istvan Csicsery-Ronay, Jr puts it, "the world has grown into sf" (1). This condition makes it possible for narratives such as those developed in *Fringe* and Ghostwalkers to situate science fiction within the contemporary present, to bridge the imaginative spaces of fantasy and reality by way of science fiction. Genetic and prosthetic interventions in plant and animal bodies (humans included), immersion in digital communication, information and technology networks – many of science fiction's imaginative visions of the future have become contemporary realities. These and other actual 'real world' examples of technological and scientific ubiquity affect groups and individuals in different ways, turning some into techno-labourers and producers, some into users and consumers, some into objects and some into subjects, and these are not mutually-exclusive categories. Technoscience is experienced in various and unequal ways throughout the globe and across social, ethnic, and regional spectrums.

Despite these significant and important differences, the ubiquity, even inescapability, of technoscience in the twenty-first century offers a powerful and persuasive argument that, in many ways, contemporary reality has come to resemble the stuff of science fiction. Various claims along these lines crop up regularly in mainstream journalism, in technocriticism, and in the work of sf critics and authors, in

[67] In this chapter I hope to develop a new angle to Graham's "science/fiction" terminology-typography, recognizing not just the contingency of science and fact/fiction but of genre as well.

remarks on the relationship between science fiction, science fact, and everyday experience, on the ways in which these terms have become increasingly blurry and intertwined. As Scott Bukatman notes, various expressions of this perception – that science fiction permeates contemporary reality – have surfaced in, for example, the technocriticism of Marshall McLuhan, in the postmodern science fiction criticism of Larry McCaffery, and in the writing of cyberpunk authors such as Bruce Sterling among others (qtd. in Bukatman 6). Our current century seems, to many, particularly science fictional. As David G. Hartwell, editor of the *New York Review of Science Fiction*, has suggested, we have now emerged from "the end of the first big century of science fiction, into the new science fiction century."[68] The claim that modern (or postmodern, or late modern)[69] reality resembles science fiction has become a cliché, but a cliché with the resonance of some kind of truth. This science-fictional experience of current reality doesn't mean our world is experienced as fully rationalized or understood – far from it. However, it does lead to the imbrication of technoscience with even our imaginings of fantasy.[70]

The blurring of science fiction and reality is not simply about the ways in which technologies and scientific developments have changed our experience of being in the world, although they have – prompting Bukatman's phrase "terminal identity" to refer

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[68] Editorial note posted to http://www.nyrsf.com/nyrsf-homepage.html, accessed March 6, 2012. Hartwell briefly describes here the coming into being and continuing activities of the New York Review of Science Fiction as a "sophisticated fanzine" in science fiction, fantasy and horror. In his concluding phrases, Hartwell riffs on the titles of two sf collections he has edited, *The Science Fiction Century* (1997) and *The Science Fiction Century, Volume One* (2006).

[69] See chapters three and four for more discussion of periodicity and temporality.

[70] Take, for instance, the viral and genetic subplots of a film ostensibly about vampires and werewolves, such as *Underworld* (2003), or the use of modern technologies to try to trace and document ghostly manifestations, or the necessity of computer technology to bring forth fantastic imaginative realities on screen such as the *Lord of the Rings* film trilogy (2001-2003).

to the identity formations arising from high-tech postmodern existence in the postindustrial North (9).[71] According to N. Katherine Hayles, we "have already become posthuman" (xiv). Contemporary networked existence has led, some would argue, to the emergence of what we might call a "posthuman subject": "a material-informational entity whose boundaries undergo continuous construction and reconstruction" (Hayles 3). As contemporary "cyborg" subjects, we fail to experience and affirm the autonomy, fixedness, rationality and so on, of the traditional liberal humanist subject, demonstrating, sometimes uncomfortably, that the firm lines between human, animal and machine – culture, nature and technology – are permeable and always have been (Haraway, *Simians*; cf. Didur, Graham, Vint, etc.). This boundary instability is a significant indication that the "science-fictionality"[72] of our everyday lives isn't simply about the ubiquity of technology. Posthuman identity and experience is related to changes in our ideas about difference and about authoritative knowledge, including the place of science *and* what we designate *not*-science in the (post)modern world, how we negotiate the place of the fantastical and the magical in contemporary technoscientific societies.

It is becoming increasingly difficult to uphold a singular and unitary understanding of 'science', to defend a solid line between science 'fiction' and science 'fact': our planet isn't made up of just one world (one reality), and there are multiple possible understandings of science, multiple readings of science fiction and science fact.

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[71] See also Francis Fukuyama, *Our Posthuman Future: Consequences of the Biotechnology Revolution*; *Cyborg Citizen* by Chris Hables Gray; and the *Posthuman Bodies* anthology edited by Judith M. Halberstam and Ira Livingston. The 'our' here is a contestable term, as much of the literature in English on this subject has a particularly Western/Northern and even North American focus.

[72] Again, I borrow and adapt this term from Istvan Csicsery-Ronay, Jr and will return to it shortly.

Working from a sophisticated critical articulation of this insight, scholars such as Donna Haraway (in *Primate Visions*, for example) and Elaine L. Graham address the science fictional character of contemporary reality not by simply emphasizing technoscientific ubiquity. Rather, their analyses also linger on the difficulties of pulling science fact and science fiction apart. Haraway situates narratives of scientific fact within the larger "heterogeneous space of SF" – a field that encompasses the proliferating labels applied to science fiction and science fantasy and "a territory of contested cultural reproduction in high-technology worlds" (*Primate* 5). Building off of Haraway's notion of "SF" as a cultural rather than simply literary category, Graham similarly uses the term "science/fiction" to denote the interconnected narratives of the scientific and literary – narratives that shape mythical and fictional representations of the human and posthuman (what Graham calls the "post/human") (Graham 14).[73]

The blurring of science fiction and science fact is bound up with postmodern, poststructuralist and now posthumanist theoretical scapes, through which the production of scientific authority and knowledge is brought back into the realm of the social, the cultural, the political, and brought up before the allegedly non-scientific (superstitious, irrational, magical) phenomena and knowings that both orthodox science and science fiction have worked to exclude. In this context, much of the scientific 'inaccuracy' of contemporary popular fiction might not be a straightforward example of getting it wrong; rather, it might indicate a kind of unconscious apprehension that Western science isn't as universal and transhistorical as the predominant framings of science and technology have encouraged us to believe. The

[73] By using the term "post/human" rather than "posthuman" Graham "hope[s] to suggest a questioning both of the inevitability of a successor species and of there being any consensus surrounding the effects of technologies on the future of humanity" (11).

resultant popular imaginings – of the speculative intercourse between science, fiction, theory, and fantasy – are a key dimension of what my project here investigates.

Science fiction, in a very basic sense, might be understood as a genre of fiction about science, or, more precisely, technoscience, as science and technology, science and society, are so inextricably entangled. Or, more precisely, science fiction is the genre that most explicitly stages the technoscientific ubiquity of many contemporary realities and imagines the implications of humans' relationship with science and technology. However, as I hope to further demonstrate in this thesis, science fiction 'proper' is not the only place such technoscientific speculation can be found – even fantasy, with its magical and supernatural focus, can be science fictional. Science-fictional speculations help to constitute broader conceptualizations of science and technology in the naturecultures (Haraway's term), or collectives (Bruno), within which they circulate, with science fiction operating as the flagship of science-fictional genres, often policing what is understood to be the 'ideal' of storytelling about technology and science. But fictional representations of science, fictions that help constitute the popular scientific imagination, frequently exist in ambivalent relation to actual sciences, and science fictions exist in ambivalent relation to "science fiction."

Despite the powerful cultural myth of the predominance of technoscience, rationality and empirical knowledge in the West, contemporary societies remain unstable, fluid, and patchwork beasts in which the official authority of Western science, technology, and rationality co-exists with several other registers and ways of knowing. Popular media texts, speculative fictions especially, mark some of this instability – and not simply through expressions of technophobia, but in representations of various kinds of non-scientific "truths" and attempts to redefine the non-scientific in rational or

empirical terms. Rapid developments in science and technology often destabilize rather than clarify the boundaries we construct between different kinds of humans, different species, the organic and inorganic, the living and non-living, nature and culture, and animal and machine – and our understanding of the possibilities and impossibilities of technoscience.[74] The persistent appeal of the paranormal, the supernatural and other challenges to the conventional technoscientific imperative in the twenty-first century hinges on the unstable and insufficient explanatory power of science.[75] Yet in the face of technoscientific confusion few people respond by completely rejecting technology and science or the possibilities of scientific understanding. Instead, we adapt to our unsettled and unsettling environments as best we can, suturing together belief and imagination, the rational and the not-so-rational, into workable worldviews and identities.

Inevitably, such patchwork conceptions are not models of the Enlightenment humanist ideal. In this sense, our collective attempts to sketch out and imagine technoscientific accounts of reality as we see and feel it may take on a kind of 'posthuman' relationship to humanist epistemologies and ontologies. The certainty of modern scientific rationality and the beings it produces is slightly unfixed, in part by the nearly incomprehensible speed of technoscientific development and the complexity of contemporary scientific theories, but also the limits and failures where speed and success, development and understanding, diverge, and where other cultures'

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[74] For just one of many examples where technoscientific developments lead to further uncertainties, see Teresa Heffernan's discussion of the ethical debates and anxieties surrounding the issue of cross-species stem cell research and the anxieties it provokes in "Bovine Anxieties, Virgin Births, and the Secret of Life."

[75] Religion and spirituality represent another related and contested sphere of knowledges and ways of knowing, a complex area I do not have the space to address here.

knowledges and practices contest the universal "truth" of Western/Northern science. The knowings and beings-in-process that emerge in this context might be termed 'posthuman', and our popular narratives, not just of science fiction but of science fantasy and the genres with which science fiction and fantasy intermingle and intersect, are key sites in which we negotiate the complexities of and our ambivalence toward posthuman knowledge, subjectivity and identity. Determinedly blurry genre lines, particularly those that play with and sometimes undermine the 'integrity' of 'science' and 'science fiction,' may represent an imaginative, speculative effort to make room in our contemporary technoscientific reality for the things that Western/Northern scientific authority cannot account for, understand, or explain away and an apprehension that such scientific knowings, and the subjectivities they produce, are not the only (and not necessarily the best) ways of being and knowing in the world(s).

Genres, Frames and Imagined Worlds

Genre theory comes in and out of fashion, but regardless of its critical ascendancy or decline, genres persist in practice, whether we choose to study them or not. Genre is a way of making sense of the heterogeneity and continuities of the worlds we engage with – categorizing similarity and difference, organizing discourses, structuring communications, classifying our tastes, and by extension, our identities. This is not a neutral phenomenon: genre creates distinctions, hierarchies (see, for instance, Baccolini 14-15). Genre provides a means of representing our worlds, and through multiple reiterations, affecting how those worlds take shape. This classifying and hierarchizing phenomenon was introduced by the ancients, then revived by the Classicists, and rejected by the Romanticists (or so the common story goes). More recently the term has been deconstructed, reconstructed and reconceptualised for an

environment of transnational capitalism and globalized mass media. The usefulness of the term, even the very existence of genre, has been a matter of much debate.[76] But however much genres refuse to settle into taxonomies of easily identifiable, pure and discrete kinds, they continue to crop up in discourses of theory and criticism and in everyday conversation.

Genre has probably received most attention from literary theory, dismissals and embraces both. The original "genre" of literary criticism refers not to the familiar categories of popular fiction we see on book store shelves or online lists but to a set of more fundamental, and simultaneously elevated, forms: epic, lyric and drama (from Aristotle) or epic, tragedy, and romance (from Northrop Frye) have thus been seen as origin points but also ideals.[77] This dual conception of genre as 'ideal' and 'originating' form is tangled up with and resonates in histories and criticisms distinguishing the high from the low, or elite and artistic from popular culture. This kind of perspective is what allows a critic such as Fredric Jameson to denigrate commercial fiction as "subliterary" evidence of genre's survival in a sort of "half life" (107). In this framing, popular narratives are devalued on two counts: as 'sub' literature and as 'quasi' genre.

Despite this idealization of originary generic forms, more common usage understands genres as categories of mass entertainment, such as the science fiction, fantasy and paranormal romance genres of print fiction and television I engage with in

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[76] There are varying, sometimes conflicting, accounts of the development of genre theory and criticism. I have found David Duff's introduction to *Modern Genre Theory* (2000) to be one of the most clear, and it has, consequently, contributed substantially to my own understanding. Some scholars prefer classifying types of fiction according to "modes" rather than "genres," as is the case with Nancy Traill's analysis of paranormal fiction.

[77] In the contemporary teaching of English these categories are frequently reframed in terms of fiction (short story and novel), drama and poetry. See, for example, Stephen Minot's textbook (7th ed., Prentice Hall, 2003) *Three Genres: The Writing of Poetry, Fiction and Drama*.

this thesis. This is not solely a popular appropriation of genre theory and criticism, for this conception of genre has also been integrated into certain domains of scholarship for several decades, informing cinema studies as well as studies of popular literature and popular music.[78] However, in the domains of print fiction and film criticism, the term *genre* is often used to denote the pulpy, popular and commercial as distinct from the literary or artistic: "genre fiction" and "genre films" such as popular romance, science fiction, westerns, detective stories, and the like.[79] Within this tradition, critics can condemn a genre text's apparent lack of substance or imagination, its submission to formulaic repetition or market forces. According to such criteria, genre is art or literature's mass culture 'other' – a binary opposition that also rings with hierarchical oppositions of masculine and feminine – so that a critic might defend a work's or author's literary or artistic merit in terms of resistance, subversion or transcendence of generic conventions, or its 'quality' in spite of the constraints of genre-based media production.

Valorizing works based on their subversion of genre constraints is a strategy that has been employed by science fiction critics to assert the literary but also social and political significance of science fictional texts. Some scholars may choose to proclaim the literary value of particular authors based on their ability to subvert the genre to their own intellectual ends. Other critics may defend the intellectual or critical value of

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[78] Genre has a somewhat different meaning in composition and rhetoric where it is applied in analyses of kinds of writing and, for some scholars, the social functions and power dynamics involved in communities of use. See Dias et al., "Genre Studies," in *Worlds Apart*: *Acting and Writing in Academic and Workplace Contexts*, 18-23; also Freedman and Medway, eds. *Genre and the New Rhetoric*.

[79] We might assume that television is automatically seen as pulpy and popular enough to not provoke dismissals of "genre television"; nevertheless, the recently emerged designation "quality television – associated with HBO programming, in particular – represents a similar hierarchizing discourse.

science fiction 'proper' for its function as a literature of speculation, ideas and thought experiments, thereby deliberately and explicitly excluding formulaic or sensationalist narratives (and by extension, much if not most science fiction film and television, and certainly video games) for their supposed intellectual failings. Common usage among editors, critics and 'literate' fans reserves the short form "sf" (or, "SF") for legitimate, intellectual science fiction, dismissing 'substandard' mass market science fiction as, perhaps, "science fantasy,", "sci-fi" or "skiffy." One of my earliest introductions to the subgenre of 'best of' science fiction anthologies instructed me that an informed science fiction fan would never use or pronounce the short form "sci-fi" to describe their beloved genre (and I have since remained appropriately chastised).[80] Nevertheless, distinguishing literary sf from the genre's 'degraded' forms is not a universal enterprise. Samuel R. Delany, for example, has expressed his wariness of critical moves that would have "marginal texts, such as SF, becoming literature too quickly" (71) – in part because such analysis would deny the specificities of sf and fantasy writing and publication (72).[81] Critical moves that try to lay claim to literary status for science fiction have the potential to gloss over the wide range of work that goes on within and around science fiction, within and around the 'popular', and the social roles that such works play.

The Work Genres Do

Fredric Jameson, in *The Political Unconscious*, is among several genre theorists who conceptualize genre (in his case from a Marxian perspective) as not simply

[80] These terminological concerns have been a hot subject more than once on the science fiction email listservs to which I subscribe.
[81] In a different twist on this argument, Roger Luckhurst points out how legitimating sf as high culture "paradoxically involves the very destruction of the genre" (qtd. in Rieder, "On Defining SF" 198).

representation or reflection, but as a form of social action.[82] Jameson's model of genre analysis combines semantic, structural and historical approaches to emphasize the work genres do. For Jameson, literary genres can be seen to express and respond to historical and social contradictions, so that it becomes possible to view a generic text as a "socially symbolic act, as the ideological—but formal and immanent—response to a historical dilemma" (138-139). This is not a simplistic cause-and-effect model but a way of contextualizing generic texts to understand the "conditions of possibility" in which they are written and, presumably, read (148). If context is about conditions of possibility, as Jameson suggests, or even conditions *for* possibility, genre is one way of giving those conditions expression.[83]

Jameson's notion of genre may help uncover the underlying contradictions shaping generic texts; however, his methodology is not concerned with the ways in which genre labels and conventions are used in the creation, marketing, reception, and interpretation of contemporary popular fiction such as science fiction and fantasy (although he does engage with science fiction in other contexts). This role of genre seems to be outside Jameson's concern here – (what he considers to be) the 'real' work of genres functioning beneath the collective and individual consciousness. Popular genres – described as "the subliterary genres of mass culture, transformed into the

[82] For analysis of "Genre As Social Action" see Carolyn R. Miller, a key text for genre studies in rhetorical theory.
[83] In *Cruel Optimism*, Lauren Berlant expands the social dimensions of genre to relate the concept of genre to affect and experience not simply by way of expression but also by way of feeling and expectation. In a short passage she addresses Jameson's work directly: "As Fredric Jameson would argue, the activity of living within and beyond normative activity gets embedded in form, but I am less interested in the foreclosures of form and more in the ways the activity of being historical finds its genre, which is the same as finding its event. Adjustments to the present are manifest not just in what we conventionally call genre, therefore, but in more explicitly active habits, styles, and modes of responsivity" (20). The historical moment she is most interested in is the historical present and the ordinariness of ongoing crisis by which it is characterized.

drugstore and airport paperback lines of gothics, mysteries, romances, bestsellers, and popular biographies…" (107), as noted above – remain a barely charted area in Jameson's revision of genre analysis. In part, this is because the processes of genre, as Jameson understands the term, have been complicated by late modern capitalism and commodification: the "social contract" function of genre – meant to specify how a particular cultural artefact is supposed to be received, or used, or read – is less straightforward in the contemporary market, where the circumstances of reception are much harder to anticipate (106-107).

Rather than reserving genre for the analysis of historical, literary texts, as Jameson here seems inclined to do, contemporary genre criticism must engage with the complexities of genres' discursive practices in the contemporary market.[84] Now harder to determine and isolate, perhaps, the social contract aspect of genres seems to be elaborated in contemporary popular fiction for many authors and for more-than-casual readers who engage in popular public discourses about what their favourite genres look like and mean – at conventions, in fan and critical publications, in online forums… These discourses play a role in the reception of popular genres but also in the features and shape of the genres at play, perhaps most famously documented by Janice Radway in her 1980s study of romance readers and the genre they actively consume and produce. This active engagement continues in the world of contemporary romance production and consumption, and in debates about the genre's relation to fantasy and science fiction. Participants in online fan and author discussions may bemoan, for example, the subsuming of the broad and heterogeneous category of 'otherworldly' romance

[84] Of course, genre histories remain relevant, interesting and important, with genres emerging and subdividing well before the development of mass culture and after, indicating the flexibility of stories and kinds of entertainment as well as tastes.

(including paranormal romance, futuristic romance, fantasy romance, or time-travel romance) into the "horror-based paranormal trend" popularized by writers such as Christine Feehan, Laurell K. Hamilton, and Anne Rice (especially stories about vampires).[85] Such discourse, involving writers, readers, bloggers, commenters, and so on, invokes genre in an effort to establish particular framings for the narratives the participants' value or dislike, emphasizing romance, the scientific and/or the paranormal according to the commentator's preference, shifting and contesting other framings that foreground one term while subordinating others.

Genre, in a sense, makes critics of us all. Joshua Gunn proffers this argument in relation to popular music (35), but this critic-making effect is not limited to musical spheres. As broad publics take up the discourses of genre in their (our) engagement with popular cultural productions in multiple media, such as science fiction and fantasy, we inevitably come to understand, discuss, and respond to those artefacts and practices in terms of and in relation to genres. More than an analytic tool, genre can come to filter, structure, and even 'naturalize' ways of listening and perceiving (see Gunn 35-36), as well as our reading and viewing. "[T]here is no genreless text" because "[e]very text participates in one or several genres," even if it must step outside those genres to declare its own generic identity (and despite the fact that it does) (Derrida, "The Law of Genre," 65). There are no texts free of genre because genre "is a universal dimension of textuality" (Frow 2). We can't have texts without genres because we persistently

[85] See Heather Massey, http://www.thegalaxyexpress.net/2009/10/does-science-fiction-romance-need-gene.html (accessed February 17, 2011). Along similar lines, a commentator from the comics webzine *Sequential Tart* suggests that this one strain of paranormal romance has become a "template" for much of the fiction that goes by the name "science fiction romance." See Corrina Lawson, "Science Fiction and Romance: A Very Uneasy Marriage How Come So Few Blend the Genres Well?" (August 1, 2006) http://www.sequentialtart.com/article.php?id=220 (accessed February 7, 2011).

understand texts in categorical terms, in relation to a network or web of intersecting generic discourses, differences and similarities – what television studies scholar Jason Mittell calls "categorical clusters of discursive practices" or what Louisa Ellen Stein (building on Mittell) describes as "multilayered sets of discursive threads" ([2.3]).

As these complex analyses and applications of genre suggest, genre is not inherent in texts or contained by texts alone but, rather, involves a complex web or relations and interactions.[86] As Mittell argues, genre texts are not the source of generic processes but sites of cultural transections as they interact "with industries, audiences, and broader contexts" of production, distribution, reception and analysis (12). Genre, then, is not essence but relation, participation rather than belonging, as (most famously) Jacques Derrida has observed in his discourse on the "madness" of generic "law" (81). In a similar vein, John Frow contends that texts are "uses of" genres, rather than belonging to them, so that texts "refer not to 'a' genre but to a field or economy of genres, and their complexity derives from the complexity of that relation" (2).[87] But the relationality of genre is not confined to similarities and differences between texts –

[86] In science fiction studies, Sherryl Vint and Mark Bould similarly "argue that there never was such a *thing* as SF," and assert that "ways of producing, marketing, distributing, consuming and understanding texts as SF came into being and are in a constant, unending process of coming into being" (43). Here we might find some convergence with rather than divergence from the idea of rhetorical genres, which takes up the idea of genre as the "functional relationship" between "structural/textual regularities" and situation (Coe and Freedman 137).

[87] Applying Frow's insights to science fiction, John Rieder (in an astute essay on the relationship between science fiction criticism and genre theory) observes that "sf is not a set of texts, but rather a way of using texts and of drawing relationships among them" ("On Defining SF" 197). This is one of five "propositions" he offers about science fiction as genre. In sympathy with Vint and Bould, he asserts that "sf has no essence, no single unifying characteristic, and no point of origin" and that "sf is historical and mutable" (193). Further, he elaborates that "sf's identity is a differentially articulated position in an historical and mutable field of genres" and that "attribution of the identity of sf to a text constitutes an active intervention in its distribution and reception" (193). As such important discussions reveal, genre labeling is a "rhetorical act" (200) and, by extension, a political act.

hierarchies, family resemblances, adherence to and subversion of established conventions. Genres, in discursive practice, are not identity but affinity, each generic text defined by its relation – similarities and differences both – to a diverse map of generic 'ideals' defined from numerous, often conflicting, positions. Generic 'ideals' and the texts and communities that respond to them enact a kind of work, and that work is worth a closer look. Of course, the generic ideal I am most concerned with here is science fiction, and I map the texts I have chosen to analyze in relation to that ideal, examining how their position at and outside the fringes of science fiction 'proper' facilitates alternative framings of science.

Genres as Frames

Genres function as categorical labels, as intertextual and relational sites where cultural processes transect, but they are also framing devices. Judith Butler touches on this aspect of genre briefly in *Frames of War* when she discusses the relationship between affect, framing and interpretation. Butler suggests that to communicate and interpret affect is not to initiate a purely "subjective act" but to engage with "the structuring constraints of genre and form": so that this process "sometimes takes place against one's will or, indeed, in spite of oneself" (67). Thus even the way we *feel* about phenomena or ideas we encounter is bound up in multiple overlapping frames – not simply those developed from our own subjective experiences but from discourse, expectation, convention – and genre. Although Butler's agenda here takes on much more serious global issues than the classification of fictional types,[88] her words

[88] Among Butler's projects in this book is an effort to better understand the ways in which frames constrain and structure our ability to grieve for and thus value the lives of others, and the ways in which media framings of particular events and circumstances (in, for example, the 'war on terror') shape the public's affective responses.

underline the social and cultural work that genres can do. Genre classification is not only a rational cognitive process but an affective and interpretive one as well, and our understanding of a genre both enables and constrains how we understand a particular work's or idea's location inside or outside of it and all that such belonging entails and implies. In the case of speculative fiction, the label "science fiction" is not simply an aesthetic or taxonomic concern but is also a matter of perceptions and preconceptions about what is and what is not science, of how we make sense of and how we feel about the kinds of knowings and practices designated scientific or not.[89]

Framing, as Butler's analysis demonstrates, is a perceptual as well as a conceptual, and (re)iterative, process. A different perspective on this insight might also be traced to the much earlier work of Erving Goffman in *Frame Analysis* (1974), where the sociologist examines the frames guiding our social interactions, including the ways in which we read and engage with the differential reality of situations we encounter. Goffman's main interest is in the frames of microsocial interaction; however, he also discusses the foundational frames that structure our understanding of the world and our place in it, our worldviews. Goffman calls these "primary frameworks": "a group's framework of frameworks—its belief system, its 'cosmology'" (27). Frames, therefore, exist and operate at multiple levels, structuring our understandings from the level of our foundational worldviews to that of our day-to-day interactions. And they generate multiple "realities," "multiple" worlds (2-3), including the worlds by which we understand the differential realities of phenomena such as science and fiction.

[89] For example, Vint and Bould's analysis of the claims of scientific neutrality bound up in identifying the Tom Godwin short story "The Cold Equations" as "an exemplar of hard-SF" (43) offers an illustration of how genre discourse can act as a means of policing reading practices and genre boundaries while simultaneously denying the social and political dimensions of science.

Butler, as I have already implied, is more interested in framing as process – how people and circumstances get framed and how these framings circulate, especially in media representations of war, torture and conflict in post-9/11 America in her 2009 book *Frames of War: When Is Life Grievable?*.[90] For Butler, framing is an epistemological and ontological issue (1), and I would have to agree. As she insightfully observes, the frames through which we perceive are "operations of power" – this is their epistemological dimension; however, these frames are ontological in the sense that they inevitably bear on questions about what is a "being," what is a "life" and how such entities are produced through "specific mechanisms of power" (1). Frames, writes Butler, "organize visual experience but also generate specific ontologies of the subject" (3). In Butler's work here there's an elision between frames, norms and interpretative schema: these are all resources of intelligibility, structuring how we perceive, understand, apprehend, and recognize. For Butler, the distinction between apprehension and recognition is a key one. We can recognize only what is in the frame but it is possible to apprehend what is outside of it – apprehension is "a form of knowing," but doesn't necessarily involve "conceptual forms of knowledge" (5). And our acceptance of framing can never be completely a matter of conscious effort. Thus classification – of genre, for example, as I noted above – is not just about conscious interpretation but also about feeling and the unconscious processes that inform and shape understanding.

What is also of primary importance to Butler's discussion are the limits of any frame and the instability of framing-as-process. Frames perpetually break. In

[90] Thanks to Susan Fast for suggested phrasing here and the reminder of this distinction.

part, their integrity is threatened by what lies outside: "'something' exceeds the frame that troubles our sense of reality; in other words, something occurs that does not conform to our established understanding of things," bringing the framing itself into focus (*Frames* 9).[91] Furthermore, frames must circulate, be reiterated, reproduced; they are subject to a temporal logic and with each iteration over time the frame gets slightly warped, changed, displaced, and its breakage highlights its very existence. As representations circulate, they break from (with) their context(s) (9). And "if contexts are framed (there is no context without an implicit delimitation of context) and if a frame invariably breaks from itself as it moves through space and time, then the circulating frame has to break with the context in which it is formed if it is to land or arrive somewhere else" (10). As a frame circulates or a framing is recontextualized, the inside and outside come into view, and whether these distinctions are merely apprehended or explicitly recognized, the process of framing itself may briefly come to the fore.

The framing Butler is most interested in here is that which makes some lives recognizable *as lives*, and hence grievable if lost, while other lives may be possible to

[91] This troubling of patterns resonates with Goffman's work on phenomena that disturb our primary frameworks. The first of these he calls the "astounding complex": "an event occurs, or is made to occur, that leads observers to doubt their overall approach to events, for it seems that to account for the occurrence, new kinds of natural forces will have to be allowed or new kinds of guiding capacities, the latter involving, perhaps, new kinds of active agents. … in general, when an astounding event occurs, individuals in our society expect that a 'simple' or 'natural' explanation will soon be discovered, one that will clear up the mystery and restore them to the range of forces and agents that they are accustomed to and to the line they ordinarily draw between natural phenomena and guided doings" (28). "In our society the very significant assumption is generally made that all events—without exception—can be contained and managed within the conventional system of beliefs. We tolerate the unexplained but not the inexplicable" (30). This does not undermine Butler's emphasis on the instability of the frame but reminds us that some frames are particularly resilient.

apprehend as *living* but can't be recognized as grievable at all. I am interested in the ethical implications of framing as well, including frames that delimit the human and the nonhuman, but my emphasis in this thesis is less on lives and is directed, rather, toward knowledges and ways of knowing – what frames and processes of framing delimit legitimate authoritative modern knowledge of the world and legitimate authoritative modern knowers, how certain framings enable and constrain speculation. But my intervention into these concerns is by way of popular culture, how we frame the "science" in "science fiction" and how the inevitable impurities of this generic category, its affinities and congress with its sister genres, mark a kind of breakage in the reiteration of generic frames, enabling the apprehension of the scientificity of fantasy, and fantasticality of science, and the possibilities of framing these categories otherwise.

Genre is a means of understanding and of shaping understanding. Genre can function as thought style (through narrative conventions, for example, such as a the depiction of time travel or as-yet-undeveloped forms of genetic manipulation). Genre can also function as thought collective (communities of science fiction and fantasy authors, fans, publishers, etc., for example), with genre practitioners, critics and adherents often sharing dispositions for perceiving and conceptualizing the worlds within and outside of generic texts. And here, I take the terms "thought style" and "thought collective" not from Goffman or Butler but from Barbara Herrnstein Smith's discussion of physician and philosopher of science Ludwik Fleck and his ideas about how our perceptual/conceptual worlds constitute and inform what we know and how we understand it. Smith describes thought styles as "perceptual-cognitive dispositions" that do not distort reality but rather enable and constrain "what we call reality to be

brought forth and experienced" (59).[92] Thinking through the similarities between Fleck's "thought collectives" and "thought styles," Goffman's and Butler's notions of framing, and concepts of genre, offers a way of emphasizing how genre functions as a delimiting but also generative phenomenon, working beyond the level of conscious attention.

Generic texts (fictional narrative the most explicit among them) construct imagined worlds, framing them to be perceived in certain ways. But this doesn't stop at representation. The imagined worlds represented within and by cultural texts – and my primary concern here is of course with narratives of the fantastic (fictional speculation) – do not just reflect or respond to the 'real' world of those who create, examine and consume them; they feed back, playing a role in how the 'real world' gets imagined, what in the world we can recognize and what we can apprehend, what we can know and become. When the genres at issue are science fiction and fantasy, the possibilities of imagination and understanding are deeply entwined with cultural conceptions of science and 'not science,' which, in turn (following Sandra Harding),[93] hinge upon the definition of science as modern (not primitive or traditional) and masculine (not feminine). Hence, genre is tied up with other frameworks and imagined worlds including modernity, humanism, gender, and science. If, as Donna Haraway points out, science has participated in gender-in-the-making, for example (*Modest_Witness* 28-32), we might also understand speculative fictions as participating in the ongoing

[92] Fleck's theories about the constitutive role of "thought collectives" and "thought styles" in both perception and cognition prefigure the more widely read theories of Thomas Kuhn on the subject of scientific paradigms (Smith 61-62). Here Smith briefly draws lines of affinity between Fleck's notion of thought styles and Kuhn's paradigms, as well as similar, parallel concepts from Foucault's discourses and regimes of truth to Wittgenstein's language games (58-59).
[93] I am drawing here from *Sciences from Below: Feminisms, Sciences, Postcolonialities* (2008). See chapters three and four for more discussion of Harding's analysis.

negotiation of our understanding of not just science but also gender and other forms of subject and identity production.

As a "structuring constraint" on the communication and interpretation of affect, to revisit the words of Judith Butler, genres and genre discourses don't simply relate to texts, to how we make sense of them, and to how we categorize them (although they do all of these things). Genre plays a role in feeling and understanding, in how we feel about and understand the things, idea and images that generic texts and discourses circulate, frame and convey. Generic texts don't just build fictional worlds from the material of our experienced realities; they construct imagined conceptual worlds in which we reside. This notion is central to John Frow's understanding of genre, by which he argues that

> genres actively generate and shape knowledge of the world; [. . .] generically shaped knowledges are bound up with the exercise of power, where power is understood as being exercised in discourse, as well as elsewhere, but is never simply external to discourse. (Frow 2)

According to this logic, genres are not just matters of style or classification; rather, "genres create effects of reality and truth, authority and plausibility, which are central to the different ways the world is understood in the writing of history or of philosophy or of science, or in painting, or in everyday talk" (2). In some sympathy with rhetorical theory, in particular Carolyn Miller and a school of critics informed by the likes of Kenneth Burke, and consequently Jameson as well, Frow conceptualizes "genre as a form of symbolic action: the generic organisation of language, images, gestures, and sound makes things happen by actively shaping the way we understand the world" (2). But because texts and discourses are 'uses' of genre rather than 'belongings' or identities, their reality and truth effects are not "fixed" nor "stable" (2). Like language

itself, genres are not inert, and world-shapings are never neutral, but they're also not inevitable or riveted into place.

Hence, contemporary genre analysis must move and is moving away from a mission of genre discovery and definition to pursue, rather, a series of questions about the work generic webs do, and the worlds they build. Genres are dynamic, relational beasts, with generic texts feeding back to re-constitute the genre to which they adhere, informing hegemonic notions, and audience expectations, about the nature of narrative structures and conventions, including the power, gender, species and other relations they invoke. But to take that another step further, generic works and the conventions by which we understand them are not simply constitutive of how we understand text, genre and the relation between them. Genres and generic texts also inform, affirm, reinforce and help further constitute the norms of recognition and broader cultural viewpoints through which we interpret and conceptualize subjects, institutions, phenomena, practices. In this, they interact and engage with other conceptual schemas, norms, discourses, etc., including gender, 'human,' 'reason,' and 'science'. They help designate and constitute inside and outside, the recognizable and the apprehendable.

In use, then, genres are, and function as (to once again return to Butler), frames.[94] Or, more accurately, framings, always in the process of being rewritten and reread, exploring, expressing, imagining, and reimagining particular worldviews.

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[94] Cf. John Frow, influenced in part by Bakhtin: "a central implication of the concept of genre is thus that the realities in and amongst which we live are not transparently conveyed to us but are mediated by systems of representation: by talk, by writing, by acting (in all senses of the word), by images, even by sound. Whereas the 'realist' genres of philosophy or history or science, and indeed of everyday common sense, tend to assume that reality is singular and external to the forms through which we apprehend it, the notion of genre as 'frames' or 'fixes on the world' [quoting Colie 1973: 8] implies the divisibility of the world and the *formative* power of these representational frames" (18-19, original emphasis).

Generic framings are processual and iterative. Any one iteration – such as a TV show that might be designated "science fiction" or a novel that might be labelled "paranormal romance" – transects and interacts with a specific, situated constellation of thematic emphases, attitudes, audience expectations, market requirements, sociocultural conditions and so on, so that each framing differs slightly from, but inevitably overlaps with, several others. Here, in early twenty-first century North America, the ubiquity and hegemony of Western technoscience – and all the anxieties that hegemony entails – looms large in the conditions with which contemporary genres engage, even as, in some cases, that engagement manifests as a kind of avoidance or resistance (as may be the case with historical romance or medieval fantasy). Among the ways by which we exist in our technoscientific milieus, however variously 'we' experience them, is through the stories we produce and consume. Genre fiction, science fiction most of all (but not exclusively), is one framing (or set of framings) of technology and science, intersecting with the framings enacted by numerous other public discourses in and about science, including, at times, paranormal romance and contemporary fantasy.

Science/Fictions

Science fiction is a genre of mass-mediated popular entertainment. It is, or is not, a "literary" genre depending upon which definition of "literature" and "genre" you choose to apply,[95] but regardless of its intellectual and literary legitimacy, the conventional imagery of science fiction is popular and familiar, circulating in texts and forms across media that are commonly recognized to be representatives of a contemporary genre. Most film, television and reading audiences in North America

[95] This might also be phrased as an opposition between literary and generic expression in discourses where literature and genre are taken as mutually exclusive. See note 14 above.

would be able to easily list a few common and iconic science fiction staples, from thematic elements such as apocalyptic or post-apocalyptic disaster, key settings such as space or the future, or recurring characters such as aliens, robots and (often mad) scientists. Scientific concepts and technological innovations figure prominently, and science fiction's visual media tend to make the most of the spectacular possibilities of the texts' futuristic, high-tech or (literally) explosive content. Nevertheless, such familiar science fiction elements are not necessarily required nor do they inevitably make a science fiction text (cf. Rieder, "On Defining SF"). What constitutes science fiction and the importance of that classification, what its texts have to offer, has been the matter of much debate in the several decades' long history of scholarly science fiction criticism, and longer in the discourses of authors, editors, and fans.[96]

Science fiction itself is, for some critics, an interstitial interchange between popular fiction and other discourses, not just around "mainstream" literature but also around science. Brian Attebery, for instance, describes science fiction "especially in the United States," as occupying "the peculiar position of being both a popular entertainment and an arena for testing ideas," adding that "[f]or this reason, SF has never been easy to class either as literary art or as a popular genre along the lines of the women's romance novel or the Western" (5).[97] In a similar vein, Istvan Csicsery-Ronay, Jr asserts that sf mediates between disciplinary and popular discourses about science (115). Science – not sciences in practice, but science in/as discourse – is itself a genre,

[96] Rieder offers a productive discussion of such debate, emphasizing not the resulting definitions (ever provisional) but how the "shared territory" that comes to represent science fiction at any historical moment "is precisely the product of the interaction among different communities of practice using different definitions of sf" ("On Defining SF" 204).

[97] I am in some sympathy with Attebery's observation but would like to complicate his comparison of sf to other popular genres and the reservation of 'ideas' for science fiction 'proper', as should already be clear.

or cluster of genres, that makes certain truth claims, claims about its capacity and authority to represent the supposedly 'natural' world, the 'laws' that underlie that world's existence and persistence, and the entities that reside there.[98] Science fiction borrows that authority in its own representation and world building, achieving degrees of 'seriousness' often denied works designated as popular fantasy.

Because of science fiction's entrenched relationship with science, scientific authenticity has often been called upon as a defining, distinguishing feature of the sf genre. For example, Darko Suvin, as Roger Luckhurst observes, "defines sf as a literature of 'cognitive estrangement'" to encapsulate its expression of "scientific skepticism and rationalism" but also to argue for its role in and significance as "political critique" (403). Luckhurst traces sf's valorization of science as a defining logic back to the emergence of models of the professional "'scientist' in the nineteenth century" and observes how this runs through the genre discourse of editors such as Hugo Gernsback[99] and writers trained in science such as Robert Heinlein and Isaac Asimov (403). Luckhurst explains:

> One of the enduring ways of defining sf and legitimating its intellectual weight is to argue that it is part of the scientific enlightenment. Sf is a literature of modernity in that it deploys the scientific method. It is secular, rationalist, and

[98] Frow gives two contrasting examples of the ways in which (disciplinary) genres make truth claims, comparing, in his case, philosophy and history. For instance, he notes the appeal to mathematical logic in modal philosophy as a means of claiming authority for a thesis that is, in actuality, "an argument which may turn out to be true" (88). History's claim to authority is, he suggests, more about structure: "the writing of history is generically structured by the narrative problems of binding the singularities of events and their multiplicity of times into the coherence of a structural explanation" (99). Science writing makes even more insistent truth claims about the world; as Frow writes, citing Robyn Ferrell, empirical sciences as a genre aim at the "revealing of reality 'as it is'" (Ferrell, 2002: 4, in Frow 87). Science fiction makes truth claims as well, in overlapping if significantly different – speculative – ways.

[99] Gary Westfahl notes that Gernsback saw science fiction as a means of educating the public about science (Westfahl 4-5). Editor John Campbell similarly valued sf's engagement with science; he saw the genre as a way "to present scientific ideas" but also for writers – scientists and non-scientists both – to speculate about the effects of technoscientific innovations on "society at large" (4-5). Cf. Attebery (17).

> skeptical; its futures are rigorously extrapolated from known empirical data; it wages war on superstition, magical thinking, and any argument made from tradition or unexamined authority. (Luckhurst, "Pseudoscience" 403)

In such framings, the triumphalism of science can be used to justify the significance and (self-)importance of science fiction as a form of cultural production, although this is usually restricted to sf in its literary form, with visual spectacles of sf seen as too reliant on sensation and special effects to encourage the kind of cognitive speculation the genre's apologists champion.[100]

Luckhurst calls for a move away from boundary policing, defining legitimate science fiction (and its others) according to the lines between legitimate and illegitimate science. Situated within Western/Northern technoscientific frameworks, the science fiction genre has come to be seen as "part of an Enlightenment project" and this perspective "underpins a lot of the ways in which sf continues to be conceptualized" (Luckhurst 403). Yet, and Roger Luckhurst is among several critics who make this point, upholding Western scientific rationality as a defining feature of sf ignores the actual histories of the genre, as well as its development, its circulation, and its use.[101]

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[100] With some sympathy toward sf film, Scott Bukatman taps into this tension in "The Artificial Infinite: On Special Effects and the Sublime" (published in *Visual Displays* and *Matters of Gravity)*, analyzing humans' ambivalence toward technology and our attempts to negotiate that ambivalence through visual displays of the sublime. Bukatman himself is ambivalent, highlighting both the phallocentric dangers and cognitive mapping potential of science fiction cinema. His conclusion particularly emphasizes this ambivalence, flip-flopping between discussions (his own and his interpretation of other scholars' analysis) of the oedipal, masculinist fantasies of control tied up in fantasies of sublime transcendence, but also the possibilities of/for feminist empowerment and intersubjectivity, "scopic instability," and understanding our places in high-tech rapidly changing worlds. Cf. Brooks Landon on analyzing sf literature versus sf film.

[101] See also, for example, the entry for "Fantasy" in the *Encyclopedia of Science Fiction*, which notes that many writers of "scientific" sf include in their work "fantasy motifs, fantastic modes of thought, narrative connections deriving from the logic of myth, metaphors from magical or religious belief, narrative resonances evoking a backward corridor of time long preceding the ages of science and technology" – such inclusions do

Defending sf as the genre of scientific rationality also reproduces what science studies scholar Bruno Latour refers to as the "Modern Constitution," through which "acts of purification and separation" present an "ahistorical conception of science, as if it were an unchanging territory with easily determinable borders . . . separat[ing] legitimate scientific knowledge from illegitimate social belief" (Luckhurst 404; cf. Vint and Bould 50). In this formulation, science and science fiction share 'non-scientific' binary opposites: superstition, magic, tradition, irrationality, and, by extension, the feminine and non-Western. Both science and science fiction are seen to derive value from transcending these 'enemies of reason' and thereby contribute to the construction of perceptual worlds where the non-scientific is marginalized, devalued, ridiculed or even expunged (if never with complete 'success').

Generic Affinities: Sf as Unstable Genre

Within the large body of cultural production that is science fiction, the most scientific of science fictions have often been labelled "hard sf" for their scientific rigor. Within sf, hard science fiction is, as Gary Westfahl describes it, "particularly devoted to the presentation and exploration of scientific ideas" (5). As Robin Roberts argues, in *A New Species: Gender and Science in Science Fiction*, the "hard" label is also a gendered (masculine) designation, defined in part by what it is (allegedly) not – soft sf, based on "soft" science: "the social sciences: psychology, sociology, even parapsychology" but also

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not disqualify their writing from the ranks of sf. Major science fiction award nominations and presentations are an additional significant marker of the genres' interpenetration. Conceding, however, that a relatively narrow definition of the genre is necessary to make an encyclopedia of science fiction possible, the contributors propose that science fiction might be considered a field within the larger category of non-mimetic fiction identified as fantasy (http://www.sf-encyclopedia.com/entry/fantasy).

"imaginary science" (5).[102] The 'hardness' of sf is often used as a marker of value or quality, but as Roberts observes, a clear line between hard and soft sf and hard and soft science "turns out to be difficult to maintain" (5). Furthermore, speculative fiction – often by women, and frequently women of colour – may deliberately challenge the lines drawn hard science and soft, or between science and fantasy or magic, complicating 'purifying' distinctions. Yet even beyond the hard/soft sf designation, cognitive rationality and a sincere engagement with what is considered to be 'legitimate' science has long been be a key characteristic of definitions distinguishing 'real' from 'pseudo' science fiction. Hence works categorized as "soft sf," often dealing more so with social or psychological issues, have existed within the science fiction genre on fraught or precarious terms.

The science of science fiction is "imaginary." Istvan Csicsery-Ronay, Jr points this out in the *Seven Beauties of Science Fiction*, and he is not the only critic to make this kind of observation.[103] "Science is sf's pretext," he suggests, but the science in science fiction "is an *image* of science" (111), a representation of what is itself a representation, perhaps.[104] This imaginative representational relationship between science and science fiction is integral to the way sf writes science (and to the way in which genre texts get included in or excluded from the science fiction genre). Scientific accuracy, even in hard

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[102] Roberts: "Although there are male soft science fiction writers, most hard science fiction is written by men, while women write soft science fiction almost exclusively," even, in some cases (such as some feminist utopias), "rejecting hard technology altogether" (5).

[103] The SFE has a separate entry for "Imaginary Science," but makes a concerted effort to distinguish sciences deliberately fabricated by sf authors from "pseudoscience," which is seen rather as fake science believed to be true. (http://www.sf-encyclopedia.com/entry/imaginary_science)

[104] Csicsery-Ronay, Jr: "Most sf writers, far from pushing an agenda of scrupulous respect for scientific truth, toy with it, making it a source of metaphors, rationalized by realistic representation, and embedded in quasi-mythic narrative traditions that express social concerns" (112).

sf, then becomes a "cat-and-mouse" game between 'fact' and speculation supported by and supporting the world building the narrative and the genre engage in (113-114). But this game is not a matter of disguising the ways in which the genre reimagines scientific 'reality'; within the generic contract, sf science is "expected to be speculative" and thus "readers anticipate" some scientific warping (114) – but not *too much* divergence from Western/Northern scientific norms.[105]

One of the ways science fiction retains the authority of its imaginative relationship with science while speculating beyond current scientific knowledge is to 'scientificize' material beyond the bounds of conventional science. As Roger Luckhurst argues, sf includes much work that "has self-evidently reveled in the imaginative potentials of every modern pseudoscientific belief, from animal magnetism, ether and degeneration theory to ESP, UFOlogy, or the Gaia hypothesis" and, as I noted earlier, the distinctions between science fiction and related genres such as Gothic and fantasy fiction are not historically easy to draw (404). Modern fantasy and science fiction have been entangled "from the beginning" (Scholes 12), particularly in Victorian genres such as the "*fin-de-siècle* Gothic" with its representations of "Gothic Science" (see Hurley 16), the "Victorian Urban Gothic" (see Spencer), or Victorian paranormal fiction (see Traill). In fact, Victorian sensationalist fiction generally maintains a family relationship with its more rationalist cousins – science fiction and detective fiction – stemming from foundations laid in the Gothic romances of earlier writers (see Attebery 12, 19-20).

[105] As I suggested earlier, notions of scientific accuracy and cultural understandings of science are more complicated than a simple distinction between fact and fiction. Csicsery-Ronay, Jr also notes that "In technoscientific culture there are diverse notions of what constitutes science. Instead of a single monolithic, officially sanctioned prototype, people build their conceptions of science from a great variety of uses, experiences, and images" (111).

These affinities and evolutionary relationships make it difficult to distinguish one genre from another with any persistent certainty. Science fiction may often aspire to scientific verisimilitude but this may be no more than a generic ideal, as it is clear that most fiction that has circulated under the sf label has taken liberties with its conceptions of scientific knowledge and the rules such knowledge defines. Nor is scientific rigor the only self-contradictory genre marker in sf's more than century-long history. As soon as science fiction and related speculative genres – such as horror and fantasy – became recognizable categories, they already began to "disassemble," suggests Gary K. Wolfe: "in a formal sense," he writes, "[t]he fantastic genres may have gained market individuation, but . . . the genre markers remained radically unstable" ("Evaporating Genre" 15). There are conventions we associate with the science fiction genre – like the robots and aliens I mentioned above – but they do not represent (and never really have) reliable criteria for establishing definitions or categorizations. Rather, a text's identity as science fiction or not is often determined by its similarities to other science fiction narratives, and its difference from the narratives associated with fantasy (and horror).

Genre markers are not simply unstable within and between the 'fantastic' genres of science fiction, horror, Gothic fiction, and fantasy – this speculative web of generic affinities and impurities; they also serve to fuse what seem to be recognizably distinct fiction categories into hybrid forms that explicitly set out to cross generic lines, producing a long history of works like the science fiction-western, cyberpunk (science fiction + detective/noir + punk aesthetic), the science fiction romance, and so on. The persistence and exploitation of this instability and fusion into the "postmodern" moment means that contemporary speculative fiction is rife with generic congress

beyond historical patterns of relationality – hybrids and genre contestations both.[106] Inevitably impure, contemporary speculative fiction (in visual media as well as literature), calls upon and appeals to readers' and viewers' familiarity with the conventions of multiple genres in order to engage and entertain.[107] And it builds worlds in which science is (or is not) unitary and universal, and is (or is not) defined by Western/Northern frameworks of modernity and rationality.

Genre Worlds

The critical potential of genre mixing and subversion is not just directed at genre discourses, although it can have the effect of interrogating how genres are defined and perpetuated. Messing around with what we expect genres to be can also have the effect, intentional or not, of interrogating the discourses that feed into the ways in which we talk about genre, even into those that inform how we make sense of the world. In this sense, genre mixing, or complicating what does and does not count as science fiction, may enact a kind of engagement, or even critique, of the discourses by which we recognize what does and does not count as legitimate science, by which we might apprehend the framings that allow us to make these kinds of distinction.

This kind of subtextual sociocultural criticism is enabled by genres' ideological underpinnings – going back to Jameson's sense of genre analysis, which sees genre as a

[106] Wolfe, for instance, discusses several horror, fantasy and science fiction writers who deliberately subvert genre expectations, critiquing and redefining the genres within and against which they write; this list includes authors such as Peter Straub, Geoff Ryman, Patricia Anthony, Stephen Baxter, Gregory Benford, Sheri S. Tepper, and Sean Stewart (see in particular, "Evaporating Genres"). This is a matter of degree and foregrounding rather than a difference of kind. As Rieder asserts, "Generic hybridity is not a special case . . . pigeonholing a text as a member of this or that genre is much less useful than understanding the way it positions itself within a field of generic possibilities" ("On Defining SF" 197; cf. note 10).

[107] See, for example, Louisa Ellen Stein's documentation of the use of cross-genre discourses by fans of the science fiction/romance television show *Roswell*.

response to historical quandaries. Many of our contemporary quandaries involve the boundary challenging experiences and contradictions of technoscientific ubiquity and complexity, alongside a loss of faith in and/or fear of technoscientific progress. This may be why, among contemporary fiction genres, the speculative and fantastic genres seem to be the most ideological at their core, and thus key popular culture sites of negotiating not simply our understanding of technoscience but even relations of knowledge, authority, and hierarchical systems of values. Gary K. Wolfe makes a claim about the ideological nature of speculative fiction in *Evaporating Genres*, arguing that science fiction, fantasy and horror (in contrast to other popular genres such as the detective story and the western) are defined less by "narrative formulas" than by "collective worldviews" (23). Wolfe traces the development of science fiction's ideological 'roots', so to speak, to the exploratory period when the space opera's domination of early pulp sf gave way to a new kind of science fiction. This newer kind of sf

> eventually transform[ed] itself into a dialogue and identity, as its favorite concerns and obsessions grew more congruent with the concerns and obsessions of society at large, and with the capacity of rational action to address those concerns and obsessions. (Wolfe 24)

Again here, with the links Wolfe points to between the ideas of science fiction and the notion of "rational action," we might be reminded of Luckhurst's assertion, noted above, that science fiction has long been associated with the Western humanistic project of progressive scientific and rational enlightenment but also with the quandaries and incongruities that notions of progress and visions of scientific possibility may raise.

Science fiction was the "first of living genres … to devote its imagination to the future and to the ceaseless revolutions of knowledge and desire that attend the application of scientific and technical knowledge to social life," Istvan Csicsery-Ronay, Jr

observes (1). Not just the first but the most persistent, so that science fiction comes to be seen as the most relevant of contemporary genres.[108] Csicsery-Ronay, Jr's own analysis deals with and supports this framing of science fiction. As he suggests,

> SF has become a form of discourse that directly engages contemporary language and culture, and that has, in this moment, a generic interest in the intersections of technology, scientific theory, and social practice. … It reflects and engages the technological culture that pervades modernized cultures. (4)

However, this engagement – this interest in the relationships between science, technology, and society – isn't simply a reflection or inert representation of our contemporary technoscientific realities, as he also notes, asserting that the genre's representations – its ongoing exploration of "radically new scientific concepts of material and social relations" – "influence our conceptions of what is imaginable or plausible" (4-5). Science fiction is concerned with re-imagining the world and its concerns are broadly understood as such.[109] Fantasy, in contrast, is often seen to be a historically-minded genre, concerned with a static view of the mythic past more so than current problems or problematic futures.

Wolfe's representation of science fiction as stemming from and performing a particular worldview resonates to some extent with Csicsery-Ronay, Jr's understanding

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[108] This is a common notion among sf fans, authors, and critics. For instance, on the social media platform Twitter.com, author William Gibson "retweeted" a statement by fellow author Warren Ellis that went, as follows: "If contemporary literary fiction doesn't read a bit like science fiction then it's probably not all that contemporary, is it" (27 Mar 2012).

[109] The relationship between science fiction and the scientific imagination has been a lively area of discussion along these lines. Science reporting often makes reference to science fiction as a way of explaining new technoscientific developments, and science journals such as *Scientific American* and *Cosmos* (Australia) publish some science fiction amongst their articles on science 'fact'. In a particularly explicit linkage of these two discursive and imaginative fields, sf author Neal Stephenson has recently published an essay and call to action for a move away from dystopian writing so that sf can once again fire up the imaginations of young scientists (http://www.worldpolicy.org/journal/fall2011/innovation-starvation).

of sf's engagement with the technoscientific imagination, and both critics note the ubiquity of elements of science fiction (and, in Wolfe's case, other speculative genres) in contemporary popular culture. However, Csicsery-Ronay, Jr's theorization is more attuned to the broader effects of this proliferation, a concern underlying his concept of *science-fictionality*, by which science fiction can be seen as an artistic and intellectual mode that reaches beyond the "formulaic effects" produced by the "genre-engine" (2) – although the genre 'proper' remains its most visible location. Stated another way, science-fictionality might be understood as "a way of thinking about the world, made concrete in many different media and styles, rather than as a particular market niche or genre category" (ix). It's not simply the relationship between science fiction and the ideology of rational progress that is the issue here but how ordinary people (as in, non-specialists in advanced technology or science) make sense of the confusion, ambiguities and dilemmas (or "incongruities," to use Csicsery-Ronay, Jr's term) posed by living in a high-tech, seemingly science fictional world. And they do so using certain "habits of mind" (2) developed within science fiction. As elements of sf proliferate in popular media, normalizing the genre's "style of estrangement and dislocation" (2), and as technoscience increasingly penetrates the everyday, science fictionality develops into "a kind of awareness," a "mode of response" to the complexities of contemporary technoscientific life "that frames and tests experiences as if they were works of science fiction" (2). It's the *incongruity* of these complexities that seems to be key here, arising from the rapidity of development and ubiquity of technoscience in recent and current history of the West/North. In a science-fictional frame of mind, we momentarily suspend judgement, Csicsery-Ronay, Jr suggests, "as if we were witnessing the

transformations happening to and occurring in, us" (3). These transformations are cultural transformations, entangled with the global hegemony of technoscience.

Csicsery-Ronay, Jr's interest in how science-fictionality exceeds the usual boundaries of genre acknowledges the dynamic role of cultural production in broader issues and ways of thinking. Framed in this way, science fiction is not simply a collection of conventions or tropes embodied in sf texts; rather, sf is a particular kind of imagining that has penetrated everyday life. Thus the genre is not only a collection of narrative fictions or fictional ideas, and it does not neutrally and inertly represent the culture in which it is created and circulates; science fiction actively intervenes in cultural discourses about technology and science and the possibilities such discourses enable and constrain. This kind of intervention, as Wolfe's ideas of genre colonization (see below) suggest, also carries over into other genres and other discourses, and to see this proliferation, we need to look beyond the bounds of what is most easily recognized as science fiction. And this is, in part, because science itself has blurry, contested boundaries.

The Provisionality of 'Science' and 'Science Fiction'

As the concept of science fictionality suggests, the ideological, worldview- and technoscience-defining, world-building work of scientific and science-fictional discourses does not only take place within the bounds of science fiction 'proper'. In fact, the science-defining work of genre (perhaps some of the most interesting work, and some of the most revealing of pop culture conceptions of technoscience) may take place around the borders of science fiction and in some of its speculative cousins – fantasy and horror. Fantasy might be seen as the opposite of science fiction, depicting imaginative worlds where magic, rather than science, is valorized and science its

negative opposite. Yet ideas about science may and often do underlie the ontologies and epistemologies of fantastic worlds, and in some cases, fictions may try, in various ways, to fuse the technoscientific and the magical/supernatural fantastic into one narrative universe. In fact, possibly because of science fiction's contemporary relevance, sf has demonstrated a kind of "colonization" of other genres, whereby authors develop "strategies for writing science fiction without writing in the *genre* of science fiction" (Wolfe 35, original emphasis).

Fantasy, science fiction's "sister genre," is (Gary K. Wolfe suggests) the "most obvious candidate of all for science fiction's imperialist impulses" (44). Even many early pulp fantasy stories exhibited a science fiction-like "rational" bias, the product of writers whose "characteristic approach to fantasy was to treat it as a kind of alternative science, with its own rigorous but internally consistent rules and a minimum of mythological supernaturalism" (44). The *Encyclopedia of Science Fiction* (SFE) even contains a listing for a subgeneric category labelled "rationalized fantasy," which comes in three types: "works in which such fantasy elements as magic are given quasi-scientific rules"; "works in which fantasy elements are transmuted into SF tropes—elves or witches turning out to be mutants with psychic powers, for example … [or] biomedical explanations of vampirism"; and "science fantasy," where "what appears to be a fantasy landscape … is in fact a science-fictional world" (Wolfe 45).[110] Fantasy can be, indeed, another science fictional genre.[111]

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[110] Wolfe cites the 1997 edition here. An updated, online edition includes "rationalized fantasy" under the entry for the *Encyclopedia of Fantasy* and reduces the sub-categories to two: "stories in which the fantastic element is rationalized or explained away" and "stories in which genuinely supernatural or magical phenomena are subject to more or less rigorously and rationally applied scientific laws." The entry proposes "hard fantasy" as a preferred designation for this scientifically rigorous fantasy, defined as the "fantasy analogue of Hard SF, with magic operating by rigid, logical and testable rules"

Phenomena such as the genre colonization that Wolfe observes and the science fictional frame of mind Csicsery-Ronay, Jr discusses mean that the worldviews and ideologies of science fiction (and however much sf owes to science, these are plural and often contradictory) are not simply seen in the genre 'proper' – whatever that may be in any one community or at any one time. Furthermore, as these critics (and others) suggest, this proliferation of the science fictional shadows and to some extent coincides with the increasing dominance and ubiquity of technoscience in 'modern' Western life. One might say that science fiction, in many ways, follows in the path of science, in the sense that the worldview, authority and rationality attached to and valued by Western/Northern science underlies much of our "rational" approach to 'modern' life and knowledge-making. Notions of observation, objectivity and scientific proof inform many habitual judgements between "fact" and "fiction." Science fictionality might be considered a way of framing that rationality, a reiteration that may bring the edges of the frame nearly into view.

As Luckhurst suggests (discussed above), there is a deep historical connection between the contingency of definitions of science and the instability of science fiction's scientific 'purity'. And, in fact, the idea of scientific thinking has proliferated to the extent where conceptions of evidence and logic are and have been used to verify the

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(http://www.sf-encyclopedia.com/entry/encyclopedia_of_fantasy_the). It is the interpenetration of science fiction and fantasy that I wish to emphasize here rather than particular labels, but the concept of "hard fantasy" marks even more clearly the way in which the lines between science and non-science, rational and non-rational, is a primary Western/Northern pre-occupation.

[111] The SFE offers another way of thinking through this relationship: in terms of tone. The entry for "Fantasy" suggests we might "regard fantasy as sf-like when it adopts a cognitive approach to its subject matter, even if that subject matter is Magic." Hence, in addition to "rationalized fantasy" and "hard fantasy" we find hybrid categories such as "science fantasy," "planetary romances" and "science and sorcery." (http://www.sf-encyclopedia.com/entry/fantasy)

unscientific, to lay claim to science, extend it to other realms. In some cases this may be a cynical appropriation of criticism and science. Yet I would argue that in popular culture this may often be an attempt to make sense of the incomprehensibility of much of contemporary technoscientific reality, and may represent a desire to be a part of science's legitimating authority – in some cases even to undermine that authority where it lies out of reach. Seen from this angle, the supernatural and the paranormal in fantasy and science fiction and our broader cultural fascination with both are not unscientific impulses but deeply bound up in our understandings of and anxieties about the place and authority of Western/Northern science.

Hence there is science fictionality even in supernatural and paranormal fiction. Sometimes this is overt, as in tales of attempts to develop a posthuman soldier in a television series such as *Fringe*, or in the experience of "paranormal" and "abnormal" scientists such as Christine Feehan's Lily Whitney, or *Sanctuary*'s Helen Magnus (see chapter five). Still easily locatable, but in a less obviously technoscientific series, is the genetic engineering disaster at the core of Kim Harrison's alternate world in the supernatural Hollows series of novels (to be discussed in the following chapter), or the quantum disaster creating bridges between magical and material worlds in Justina Robson's Quantum Gravity books (analyzed in chapter five). And sometimes the technoscientific concerns lie beneath the surface, as in the evolutionary and sociobiological theories informing representations of werewolves and vampires in narratives like Charlaine Harris's Sookie Stackhouse novels or their televisual adaptation in HBO series *True Blood* (see chapter three). In these kinds of narratives, manifestations of the paranormal become rational and/or scientific phenomena, and the supernatural becomes simply the unknown or not yet understood.

These genre texts, these print fiction and television series that I discuss, present framings, reframings, of technoscience as it predominates in the contemporary Western/Northern world – an environment that, as I discussed at the beginning of this chapter, is post-postmodern and posthuman (more to follow). In this thesis I reframe contemporary marginal science fiction, fantasy and paranormal romance narratives as science fiction to uncover embedded apprehensions of problems with Western/Northern scientific authority and with the notions of the human subject to which that authority refers. Designating, designing, something as generically science or science fiction is a way of laying claim to scientific authority. I am interested in how shifting the boundaries of science/fiction beyond its conventional margins can reveal a different, pluralized conception of science, of significant entities and authoritative, empirical knowledges. If genres can create worlds, reframing genres can reveal other worlds. Reframings of science fiction that resist, subvert, or simply disturb the frame of hegemonic delineations between science and non-science, taking up speculative possibility as scientific truth, may represent a desire for more workable posthumanist science*s*, knowledges and ways of knowing that will be more effective and more liveable in our destabilized present and futures.

CHAPTER 3: Magic, Technoscience and Science-fictional Fantasy

Supernatural Fiction and Irrational Technoscience

The paranormal, as I discussed in chapter one, represents a cross-media site of imaginative intersections and generic congress. Framing the paranormal in science-fictional terms, while drawing on elements of other genres, such as realist fiction and romance, the "pseudoscientific" narratives of television shows like *Fringe* or paranormal romance series such as the Ghostwalkers novels in effect blend generic impurities while blurring the categories of legitimate and illegitimate science, technoscientific fantasy and reality, the human and the posthuman. Paranormal phenomena are conventionally excluded from the domains of the "natural," "rational" and "scientific" in modern Western/Northern frameworks; however, these narratives approach the paranormal on scientific and rational terms. By way of this approach – depicting an expanded conceptualization of posthuman science – such texts enact an engagement with technoscientific framings, recognizing the limits of Western/Northern humanistic sciences and apprehending the possibility of more emotionally rich, subjective, and perceptive alternatives.

Reframing seemingly "unnatural" phenomena as the posthuman scientific paranormal is, of course, not the only way of negotiating the lines separating the inside and outside to Western/Northern science. Furthermore, technoscientific thrillers, whether television or paranormal romance fiction, are far from the only place where genre classifications are complicated alongside hegemonic conceptions of technology and science. A whole subset of contemporary fantasy fiction engages indirectly with Western/Northern technoscientific modernity by setting its stories in worlds much like but not quite our North American here-and-now. This subgenre, commonly marketed as

"urban fantasy," takes up the *supernatural* – as opposed to *paranormal* – as external to rather than an extension of modern Western/Northern technoscience. But by situating fantasy narrative in a version of the present, many of these works express a kind of science fictionality in their attempt to grapple with what it might mean to be confronted with the inescapable reality of magic and the supernatural in contemporary technoscientific societies.

In this category of contemporary fantasy, which has emerged as a popular fiction phenomenon in the early twenty-first century not just in print fiction but also in visual media, magic and the supernatural tend to represent alternative, effective, and materially real ways of knowing and being in the world. Via this frameshift, such urban fantasy fiction, in effect, can enact a kind of challenge to Western/Northern science's exclusive (and exclusionary) hold on reason, modernity and enlightenment, whether there is any conscious intent toward this end or no. Looking closer at specific texts within this boundary genre – science-fictional fantasy – I pursue this line of argument throughout the rest of this chapter. I argue that such speculative representations of empirical magic and supernatural materiality set in familiar contemporary realities act as shiftings – reframings – of epistemological and scientific authority. Redistributing rational authority to knowings and doings outside of orthodox Western/Northern frameworks, these narratives can function as fictional means of grappling with some of the contradictions and irrationalities of technoscientific ubiquity and complexity in "modern" North America.

Technoscientific Contradictions and Irrationalities

In the ostensibly "modern" space-time of contemporary North America, the workings of the highly advanced technologies and sciences in which we are immersed

are mysterious to the average person. They might as well operate by magic. This is one of the irrational contradictions of current Western/Northern reality. And this idea has become a basic tenet of speculative fiction, so much so that sf fans, authors and critics have rampantly quoted famed science fiction author Arthur C. Clarke (in pop culture texts and conversations across various media and forums) for his declaration: "Any sufficiently advanced technology is indistinguishable from magic."[112] Less frequently quoted but similar in its intermingling of the technoscientific and the fantastic is John W. Campbell's related claim that "[s]cience is magic that works" (qtd. in Roberts 7). Such reflections on the relationship between technoscience and magic are, as Robin Roberts argues, about "perspective" (7) – about culturally and historically contingent definitions of science, technology, and magic, and positions from which such knowledges, tools and practices can be understood.

Numerous science fiction/fantasy hybrids from various periods have drawn on this elision of science and magic to rationalize or explain away seemingly magical, even mystical, phenomena and societies in advanced technoscientific terms.[113] However, women science fiction authors have often reversed Clarke's and Campbell's aphorisms to reframe magic as technology and science, upsetting the sexist alignment of masculinity with effective and authoritative technoscientific knowledge and practice (Roberts). *Technology* "means much more than applied science" (Rowbotham 37), and *science* (as feminist and, particularly, postcolonial science and technology studies, or STS, scholars have argued) should be understood to refer not just to modern

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[112] The SFE traces this quotation, the third of Clarke's laws of science fiction writers, to a footnote in the 1973 edition of *Profiles of the Future: An Inquiry into the Limits of the Possible* (1962; rev 1973; rev 1984; rev 2000) (http://www.sf-encyclopedia.com/entry/clarkes_laws, accessed June 18, 2012).
[113] See chapter two for more on "rationalized fantasy."

Western/Northern technoscientific knowledge and practice but to "any and every culture's institutions and systematic empirical and theoretical practices of coming to understand how the world around us works" (Harding, *Sciences from Below* 16).[114] Thus traditional practices and ways of knowing that have been relegated by Western/Northern orthodoxies to magic and superstition might be understood as kinds of technology and science. The science-fictional reframings of feminist science fiction and the growing body of critical work with which they intersect represent a shift in the perspectives from which science, technology, magic and tradition are viewed. We might, then, further revise Clarke's and Campbell's formulas: any sufficiently effective magic could be considered a kind of technoscience, and technosciences are knowings that work.

Like the domain of theory and practice labeled "pseudoscience" (discussed in chapter one), the knowings and doings excluded from Western/Northern technoscience as "magic" and "superstition" represent a domain of subjugated knowledges, as many feminist and postcolonial STS scholars have successfully argued.[115] These alternative ways of knowing have been largely marginalized and excluded from institutionalized, professionalized and authoritative Western/Northern sciences for their supposed lack of empirical reliability, *objective*, *disembodied* reason and logic (more on this later) and reliance on subjective and embodied experience, on "superstition" and on "magic." However, the goal of feminist and postcolonial STS is not simply to uncover women's

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[114] In an endnote Harding acknowledges problems with the word *empirical* and in applying an outsider's term, *science*, to the practices of people who don't use that terminology; nevertheless, she feels that the resulting emphasis on the reliability and scientificity of practices outside the Western context is worth the risk (note 10).
[115] "Who is remembered and revered is not a matter of chance but bound up with how science is defined and what model of the relationship between science and technology is adopted; it indeed depends on how knowledge is constituted" (Rowbotham 37).

and indigenous counterhistories of science and technology (and their imbrications). Many critics in this field actively advocate that the (embodied, subjective, reliable) knowings and doings of Western/Northern technoscience's "others" be acknowledged as authoritative voices in a pluralized and heterogeneous framework of modern science*s* (in plural) and cognitive diversity.[116]

With such contested definitions of modern, rational science and the oppositional voices of feminist and postcolonial criticism and speculative fiction in mind, this chapter functions not just as pop cultural analysis but also as an examination of intersections between knowledge hierarchies and genre discourses – specifically focusing on the malleable and relational boundaries between science fiction and contemporary fantasy, science and the supernatural, technology and magic. Where I focused in chapter one on the paranormal reframed as part of an extended posthuman conceptualization of science, here I focus on magic and the supernatural brought into dialogue with technological and scientific domains while remaining distinct from modern Western/Northern technoscience. Particularly in the slippery urban fantasy subgenre (further explanation to follow), speculation about the contemporary *realness* of the supernatural and the *rational efficacy* of magic can, in effect, assert a claim of legitimacy

[116] Such projects require redefining our notions of "modern," of effective science and technology, and demands that we acknowledge the inevitable imbrication and joint functioning of science and technology. See, for instance, Sandra Harding: "To say this is not to imagine that it is always useful to think of scientific and technological changes as identical processes or ones with completely parallel histories. Yet once the concept of technology is no longer restricted to hardware but includes the three other aspects of such change [the development of new skills and knowledge, changes to the social division of labour, the new meanings of these changes], and when science is taken to consist not just of abstract representations of nature but also as distinctive kinds of interactions with it, then contexts begin to appear for examining how [science and technology] function together as one. Science studies has convincingly demonstrated that the purported boundary between them, if it ever existed, has now been largely dissolved" (184).

for embodied knowing and practices alternative to the mysterious modern Western/Northern technoscience we know so well yet understand so poorly in contemporary North America.

In the following pages I continue my discussion of popular television and print fiction series, stories with bold female characters, and the work of women authors, finding in contemporary fantasy an underlying concern with Western/Northern technoscientific authority and ideas, even where it's not readily available on the surface. Science-fictional analysis of Kim Harrison's urban fantasy series The Hollows reveals how the work of one popular contemporary woman writer can enact a frameshift in technoscientific and magical authority and depict magic as a rational and effective way of knowing and engaging with the world. Similarly, closer examination of the television series *True Blood*, based on Charlaine Harris's Southern Vampire Mystery (Sookie Stackhouse) novels, reveals science-fictional concerns. Here I draw on the insights of feminist epistemology and science and technology studies to analyze the series' validation of embodied knowing. First, however, I need to address the generic and subgeneric constellations in which these narratives are produced and in which they circulate, in part to explain the significance of the publishing category of urban fantasy, and its televisual adaptation, as a site of pop culture engagement with the quandaries engendered by "modern" technoscience.

Patchwork Genres, Rational Magics and Supernatural Realities

Genre critics have spent much productive (and some fruitless) energy differentiating science fiction from fantasy and other genres, such as horror, but in popular practice the labels function largely as matters of convention, describing categories of taste, marketing, and criticism, and may be used overlappingly, even

haphazardly and inconsistently. This haphazardness and inconsistency can't be all that surprising to scholars whose theories and analyses, informed by postmodern and poststructuralist criticism, have complicated our understanding of what a genre might be – not an identity but a relationship, an affinity, a way of framing the world.[117] Any text, then, exists in variable relationships to the genre labels it may claim, depending on the communities in which it is produced, circulated and consumed, and the uses to which labelling is put.[118] If this is the case, then examining those relationships and other generic affinities may be even more informative than attempts at classification or the delineation of differences, and certainly more informative than debating *whether* a text is or is not science fiction. The framing and world-building work of genre is revealed not through the processes of classification but through analysis of such processes – of *how* genres are defined and the reading practices that enable such definitions. Sherryl Vint and Mark Bould's analysis of the factors enabling a story like Tom Godwin's "The Cold Equations" to be read as an exemplar of hard science fiction, and the denial of science's social construction tied up in such a reading, is a lucid demonstration of this kind of work. But further, how genres and subgenres are *opposed* in a given cultural and historical context – enabling fantasy to be framed as unscientific fiction, or speculative stories foregrounding social issues to be cast as "soft" rather than "hard" sf – are also important gauges of the kinds of world-building framings speculative fictions, and discourses about speculative fiction, can enact. Additionally, looking at how genres

[117] See chapter two for my discussion of genre theory and of definitions of the sf genre, particularly definitions that rely on the valorization of scientific rationality.
[118] Here, as in chapter two, I would like to point to John Rieder's "On Defining SF, or Not: Genre Theory, SF, and History" for its insightful discussion of the significance of such contemporary insights in genre theory to the study of the science fiction genre.

intersect in particular texts and practices can reveal where hegemonic framings may be foregrounded or where reframings begin to break from their hegemonic contexts.

The instability of the lines between genres like fantasy and science fiction are not simply an ahistorical issue of how genres work. There seems to be a particular proliferation and pervasiveness to the contemporary interpenetration of popular genres, provoking critics such as Gary K. Wolfe to claim that we are, in some sense, in a "post-genre" environment (*Evaporating Genres*).[119] Vint and Bould agree that "fantastic fiction which violates the notion of genres as pure and distinct categories has achieved critical prominence and popular success in recent years," however, they contest the idea that this indicates a "dissolution" of genres, as genres have never been pure (43). I concur with Vint and Bould's assertion that genres are always impure. However, in a cultural and historical moment and space, where the conditions and effects associated with "postmodernity" have permeated popular culture and cultural production, "post-genres" may be a useful shorthand for marking the kinds of genre hybridities currently being produced and consumed. Throughout this thesis, I seek to situate and historicize such genre impurities that are particular to the contemporary Western/Northern cultural milieu.

Contemporary genre instability and hybridity relates, in part, to twenty-first century audience sophistication and competencies: as readers and viewers we are familiar with the conventions of several well-established genres and increasingly enjoy

[119] On this "evaporation of genres", Wolfe observes that, in one sense, "evaporating" designates the way in which fantasy, science fiction and, to a lesser extent, horror, have "grown so diverse and ubiquitous that [they seem] a central part of the fabric of contemporary culture—infiltrating other genres, the literary mainstream, otherwise conventional movies and TV programs, commercial art and advertising, music, theater, design, even pop ontology [. . .]"; this kind of genre "destabilization" is healthy, less so (he suggests) the kind that involves writers who "recycle familiar tropes and effects" with some "substantial financial rewards…" (51).

the pleasures of texts that reflexively or consciously resist them or mix them up. The "post-genre" developments Wolfe remarks on are also, as he asserts, a result of authors evolving and redefining established genres by working against familiar conventions or exploiting cross-genre marketing appeal. But the particular articulations of current genre mixing practices also relate to contemporary social conditions, where long-familiar genre conventions (and the oppositions between genres they rely on) may no longer resolve the contradictions of late twentieth and, now, twenty-first century North American and Western (Anglo) European life.[120] Genre mixing, especially genre mixing with a science-fictional bent, may seem a better reflection of the world in which we live.

Intertwining the genres of science fiction and fantasy, in particular – associated as they are with science and magic, respectively – can be a way of tapping into the technoscientific contradictions and irrational realities of everyday life in North America. Boundaries, well beyond those of genre, are unstable in our day to day lives, so there's a particular kind of resonance, even realism, to fiction that reproduces the drawing but also troubling of the lines dividing science and technology from their 'enchanted' others. The science-fictional 'urban' fantasy texts I look at in this chapter begin to illustrate the complexities and patchwork relationalities characterizing the speculative genres of contemporary popular narrative, apprehending some of the quandaries of modern scientific authority in North America.

These are fictional iterations that have slipped, in significant ways, from hegemonic framings of modern technoscientific reality. Mixing actual and

[120] Lauren Berlant makes a related claim in a different context in *Cruel Optimism*: "rather than tracking the 'waning of affect' as the mark of the present, I track the waning of genre, and in particular older realist genres (in which I include melodrama) whose conventions of relating fantasy to ordinary life and whose depictions of the good life now appear to mark archaic expectations about having and building a life" (6). For Berlant this is not a dissolution of genre but a transformation in dominant genres.

counterfactual worlds and expressing the uncertainty permeating the lines between the scientific and the irrational in their refusals of generic purity, they enact a reframing of what might constitute reliable ways of knowing. To this end, the narrative of Charlaine Harris's Sookie Stackhouse novels, adapted for television as the currently running series *True Blood*, engages with the mind/body dualisms underlying rational Western/Northern technoscientific authority, reframing the embodied experience of supernatural being and knowing as materially and reliably real. Kim Harrison's Hollows novels take a different approach, manifesting a frameshift in notions of modern rational authority and depicting a world in which Western/Northern technoscience seems arcane and magic reliably modern but where there is and indeed must be room for both. It is significant that this frameshift takes place within a series that is marketed and popularly understood not as science fiction but as contemporary fantasy.

Urban Fantasy

Kim Harrison's writing is, according to the issue of *Locus* that featured her on the cover, "urban fantasy," as are the Southern Vampire Mysteries of Charlaine Harris, who is also featured in the issue.[121] Both series are "fantasy," despite their contemporary North American settings, because they depict worlds in which magic is real, publicly

[121] See *Locus: The Magazine of the Science Fiction and Fantasy Field*, Issue 580, Vol. 62, No. 5, May 2009. Other authors identified on the cover and who contributed commentary on the "urban fantasy" genre include Kelley Armstrong, Mike Carey, Vicki Pettersson, T.A. Pratt, Patricia Briggs, and Marjorie M. Liu. It is worth noting that, like Christine Feehan (whose work I discussed in chapter one), most of these authors are white American women. The exceptions are Armstrong, who was born in London, Ontario; Liu, who is Chinese-American; Pratt who is male; and Carey, who is British and male. All these authors ideas identify with the "urban fantasy" label (among others), but publishers, booksellers, libraries and critics have described their speculative fiction with a variety of adjectives including "general," "contemporary," "dark," and "paranormal." As I noted earlier, genre label usage may often seem haphazard and inconsistent.

known (at least to some extent), and many of their main characters are magical, not-quite-human beings: vampires, witches, werewolves, fairies, and so on. In The Hollows, protagonist Rachel Morgan is a witch (and a bounty hunter of sorts), working and living alongside her supernatural business partners and roommates, a living vampire and a four-inch tall "pixy." In the Southern Vampire Mysteries (and *True Blood*) protagonist Sookie Stackhouse is a part-human part-fairy telepathic waitress who encounters, and gets involved with, vampires, werewolves, shapeshifters and a variety of other supernatural characters. Harrison's stories are indeed "urban" as well as fantasy, taking place primarily in the city – an alternate world version of contemporary Cincinnati, Ohio, and its fictional cross-river counterpart, The Hollows, Kentucky. Harris's Stackhouse fantasy stories are (as the author herself points out) more "rural" than "urban," set in small town Louisiana (a fictional community called Bon Temps), but again this is a contemporary, and in this case Southern, American setting (see Harris in *Locus* 34). Like most recently published fiction labelled urban fantasy, The Hollows and the Sookie Stackhouse novels draw on and adapt the conventions of a variety of popular narrative types: particularly contemporary, dark and/or mythic fantasy, but also detective and crime fiction, supernatural and gothic horror, erotica, romance, comedy and, to some extent, science fiction.[122] Generic affinities and relationalities here are multiple.

As a relatively new subgeneric phenomenon, the proliferation of urban fantasy in contemporary print publishing, much like the paranormal romance category with which it overlaps, has received far less academic scrutiny than the genres whose

[122] Urban fantasy "embraces science fictional world-building" (Vaughn 35), and its stories may "lean heavily on science fiction" (*Urban Fantasy Land*, qtd. in Trombi 32). More on how these particular series lean on science fiction will follow below.

conventions it adapts.[123] At the same time, in fan and publishing circles efforts to define the genre and its appeal have proven to be a lively area of discussion and debate, and some of this is captured in the *Locus* special issue (2009) featuring Harrison and Harris. Here Executive Editor (now editor-in-chief) Liza Groen Trombi remarks on the recent and "notable sea change in what the term [urban fantasy] refer[s] to," citing the "burgeoning popularity of books by Laurell K. Hamilton, Kim Harrison, Charlaine Harris, Patricia Briggs, and the like," as "set[ting] the stage for the 'new' urban fantasy that has been making bestseller lists without fail" (32). The common conventions she lists are few but essential: "paranormal characters – vampires, werewolves, demons, witches, etc." blended "with a modern-world setting" (32) – the intrusion of the magical and supernatural into the familiar contemporary (Western/Northern) world.

Several commentators in *Locus* remark on the prominence of women writers in the field and their predilection for strong female characters, or, the "'kick-ass' heroine" (Trombi 32), and these 'feminine' elements contribute to the subgenre's intersection

[123] This may be due to the newness of the subgenre but is further complicated by differences between popular and publishing use of the term "urban fantasy" and academic usage. Following John Clute ("City and Urban Fantasy"), *The Cambridge Companion to Fantasy Literature* persists in using "urban fantasy" to refer to more 'literary' fantasy fiction where the fantastic and the city collide in various interrogations of urban space and existence. Critic Alexander Irvine bemoans the loose contemporary application of "urban fantasy," "now diffused in a fog of contradiction (and, it must be added, marketing noise; the writers of 'paranormal romance' have all but co-opted the term for the broad American readership)" (Irvine 200). In the *Companion*, the writing of Harris, and we might assume Harrison as well, gets lumped in with "paranormal romance" as a subset of the awkwardly named "template dark fantasy" (such as Jim Butcher's Harry Dresden novels) – basically, series fantasy often featuring mysteries and taking place in mundane worlds "permeated by the worlds of faerie or the supernatural" (Kaveney 219). Roz Kaveney's is a gendered distinction here, based largely on whether the novels feature male or female protagonists and on the importance of romantic relationships to the characters. Many North American and British authors and publishers draw the lines differently, insisting on important distinctions in how paranormal romance and urban fantasy generally handle their romantic relationships (see *Locus*, 62.5 (2009): 33-42).

with paranormal romance. However, paranormal romance (as several contributors also note) tends to follow the rules of popular romance, culminating in the happily-ever-after ending, or focusing on one monogamous romance per book, while urban fantasy is more likely to withhold romantic resolution (and complicate ideals of monogamous heterosexual coupling). Regardless of how sex and love are handled in urban fantasy, romance, sexual tensions and sex scenes are not integral to every story instalment or essential requirements of reader recognition, nor is the authors' or protagonists' gender. What does seem to be crucial to current practitioners and audiences is the contemporary setting and the supernatural characters, the intermingling of the magical and the mundane – key elements of what urban fantasy is popularly understood to be.

The world mixing enacted by urban fantasy is also the primary trait that imbues the subgenre with a degree of science fictionality, enabling it to function as a kind of reflection on contemporary technoscientific reality in North America (or in some cases, Britain, Europe, and the North/West more broadly). This intermingling of worlds, and of the worldviews with which they're aligned, hinges, at least in part, on the relationship between fictional and actual realities in the narratives and the interpenetration of the two – the familiar and extraordinary intertwined. As I noted above, the novels feature fictional and actual communities (Bon Temps and New Orleans, for example, in the Stackhouse series, The Hollows and Cincinnati in The Hollows). Human-like supernatural characters appear alongside familiar human ones (including, at least in reference, real world celebrities like Arnold Schwarzenegger in The Hollows or Oprah in the Southern Vampire Mysteries). Familiar law enforcement agencies and political organizations operate alongside unfamiliar, supernatural ones (the Hollows has Inderlander Security and the Federal Inderland Bureau, or FIB, while the Stackhouse

novels feature an ordinary police force but also a politic ruled by vampire kings and queens, and policed by sheriffs). Cell phones can operate in the same room as magical protection circles (Hollows) and vampires use modern technologies like cars and laptop computers (in both the Hollows and Stackhouse series). These novels enact their mixing of genres, then, largely by way of intermingling the mundane with the magical, combining supernatural fantasy with mystery solving and crime-fighting, a little of the scariness and goriness of horror and thrillers, some humour, roller-coaster romances, sex and sexual attraction with technoscientific ubiquity. Their engagement with the contemporary reality is, through this last element, science fictional.

Mixed Worlds, Mixed Modernities: Knowledges and Ways of Knowing in The Hollows

The Hollows contemporary fantasy series, written by Kim Harrison (HarperCollins, 2004–),[124] takes place in a hybridized modern world of technoscience and magic. Merging fantasy and science fiction in a counterfactual / alternate world setting, Harrison's narratives provoke questions about genre and the relationship between speculative fiction and science. Hard science is not obviously central to the series, but the possibilities and consequences of technoscientific knowledge inform the fictional world's underlying logic. At the same time, these stories (and stories like them) enact a reframing of scientific authority, making room in their narrative worlds for forms of knowledge and ways of knowing that Western/Northern modernity has historically devalued – not within or apart from but alongside a world structured by

[124] The Hollows series comprises ten novels, a handful of novellas and short stories, a world guide, and a graphic novel as of June 2012. The series is still in progress and has been picked up for TV adaptation by US television network CW, with a pilot scheduled for the 2012-13 season. (CW produces other two generically related series, *The Vampire Diaries* and *Supernatural*, and the writer of the Hollows adaptation, Jordon Hawley, is best known for his work on *Smallville*, the story of a young Superman.)

Northern/Western technoscience. While Harrison's use of supernatural characters with magical powers marks the series as fantasy (as discussed above), the narrative's persistent preoccupation with legitimating the supernatural and its explorations of anxieties rooted in technoscience emphasize that in many ways, these stories are scientific fictions, whether their details are scientifically accurate and possible or not.

The particular generic hybridity of urban fantasy provides one immediate marker of boundary instability in the Hollows, as I have suggested above; even within the first pages of opening novel *Dead Witch Walking*, the series enacts a mixing of worlds through its mixing of genres. Identifying herself as the "kick-ass heroine" by way of her "leather pants" and "snag and drag" assignment, protagonist Rachel Morgan begins her first person narration mid-stake-out on the dark and rainy city streets – mixing here elements of action, hard-boiled detective fiction and film noir (*Dead Witch Walking* 1). But fantasy – the supernatural element – immediately intertwines with these more 'realist' conventions, as Rachel describes her "usual line of work" and reveals her own supernatural identity: "Apprehending unlicensed and black-art witches … it takes a witch to catch a witch" (1). In contrast to these gestures toward crime fighting and mystery solving, the series' science-fictional elements are rarely so overt. Nevertheless, as Harrison has pointed out on her author blog, the logic of this fictional world hinges not on mystery and the supernatural but on a "bioengineered tomato."[125] That "bioengineered tomato" is a catalyst, the crux of a set of technoscientific turning

[125] For Harrison's blog post, see http://kimharrison.wordpress.com/2011/08/03/contest/, accessed June 22, 2012. Harrison notes here that her Hollows series was nominated for NPR (National Public Radio)'s 2011 best science fiction and fantasy books contest (see http://www.npr.org/2011/08/02/138894873/vote-for-top-100-science-fiction-fantasy-titles, accessed June 22, 2012). The NPR contest explicitly excluded horror (as in Steven King) and paranormal romance (in which it contentiously includes Charlaine Harris's Stackhouse series).

points where fictional and actual worlds first align and then diverge, with the 'real' contemporary condition of ubiquitous technoscience as a backdrop and motivating logic. In particular, it is the rise of genetic science and fears of where genetic science might lead that Harrison's series tangles with, and by the third chapter of the first Hollows novel, *Dead Witch Walking* (2004), this is abundantly clear.

Genes loom large in the North American popular imagination. The importance of genetics, of DNA, in how we now conceptualize our worlds and ourselves has prompted scholars to coin terms like "genetic imaginary" (Jackie Stacey) or the "pop gene" (Barbara Duden and Silya Samerski) to describe our fantasies (frightening and promising both) about genetic and genomic technosciences and the meanings the word "gene" has accrued as it circulates in popular public discourse.[126] And it's not just in our fictions: science reporting often frames DNA as fundamental and determinant – as, for example, the solution to a wide range of scientific, evolutionary and historical mysteries.[127] But as critic Heather Schell has argued, *popular* cultural understandings of technoscientific fields like genetics don't necessarily surface in what we easily recognize as "science fiction about chromosomal manipulation … or artistic renderings of the genome," which may offer "relatively sophisticated explorations of contemporary bioscience" (110). Broad public understandings of genetics are often informed less by

[126] Cf. Roger Luckhurst: "Cultural and humanist conceptions of the integrity of the body probably have a wider influence than scientific conceptions, making things like genetic and reproductive research highly contentious, but also highly productive for Gothic, fantastic, and science-fictional narratives" (Luckhurst 404).
[127] See for example, a story in *Cosmos* about King Tut, where DNA seems to hold the answer to the questions: what killed him, who was he related to, what did he look like? and so on (http://www.cosmosmagazine.com/news/3315/king-tut-has-dna-test-killed-malaria, accessed February 17, 2010). A similar framing shows up in a BBC article on northern right whales, positioning DNA as the key to understanding the whales' small population size (http://news.bbc.co.uk/earth/hi/earth_news/newsid_8518000/8518597.stm, accessed February 17, 2010).

complex and sophisticated representations of genetic research and more so by widely circulating imagery and ideas of DNA as genetic blueprint, as determinant of behaviour and identity (genetic traits and inheritance), and as the key to understanding evolutionary histories and adaptations. When it comes to the relationship between genes and behaviour, in particular, Schell asserts that popular culture is often influenced more by evolutionary psychology – which "takes as its premise something that remains a research question in genetics: What is the relationship between our genes and our behavior?" (111). Working from this connection, we can find indications of popular engagements with genetic theories in fictional narratives about the supernatural, such as stories about werewolves,[128] vampires and other not-quite-human beings, where (super) "natural" behaviour is framed as determinant according to supernatural kind ("race" or "species," for example).

Genetics and DNA prove to be a persistent, if not always foregrounded, concern throughout the Hollows series. One of Rachel's primary antagonists is a wealthy elf (Trent Kalamak) who produces and distributes illegal "bio-engineered" drugs, providing some of the plot impetus for the first Hollows novel and carrying over into subsequent books as well. The supernatural genome also proves to be a central issue for the novel's main characters, explaining many of their motivations, relationships, and positions in the supernatural family tree. In book two, *The Good, the Bad, and the Undead* (2005), Rachel reveals that she had a deadly "genetic disorder" as a child – a problem with her

[128] Schell: "Lycanthropes and alpha males may seem an unlikely starting point for exploring genetics in popular culture, but they are actually vital to understanding certain aspects of our cultural geography. … Once we look outside the narrow arena in which scientists, artists, and others self-consciously attempt to articulate the implications of genetic research, we discover a larger culture, virtually unmapped, whose understanding of genes derives not from the life sciences but from the field of evolutionary psychology" (Schell 110).

"mitochondria" that, she soon discovers, was cured by illegal "genetic manipulation" developed by Trent's father (*The Good* 203, 210). This medical history turns out to have a number of surprising repercussions in terms of character and plot development. Witches, Rachel learns, are a species of genetically-altered demons, diminished in power; her illness turns out to be caused by a recursion of demon DNA in the witches' genome, and the genetic therapy that heals her doesn't erase the mutation but repairs it, enabling her to practice demon magic.[129] Technoscience, here, doesn't rationalize magic but is revealed to work alongside it in the evolution and differentiation of species types.

Rachel has her own gene-related quandaries but she also gets caught up in other characters' genetic subplots. Now, in effect, a female demon (one of two), Rachel is implicated in the demon species' collective survival. She also becomes involved in a search for a genetic fix for elven genetic degeneration. The elves are in danger of extinction – their population is small and reproduction rates are low thanks to a demon curse that permanently damaged the elven genome, and it requires a sample of ancient elf DNA to reverse the damage (see *Every* 412-415). As these backstories indicate, the "genetic imaginary" is an important part of the Hollows' world-building structure. The actual and particular workings of genetics and genetic engineering are less important to

[129] For more details about supernatural family trees in the Hollows, see, for example, this explanation from Rachel: "Vamps and Weres, whether bitten or born to their status, were only modified humans. Though witches mimicked humanity almost perfectly, we were as different as bananas from fruit flies at a cellular level" (*The Good* 206). Elves and humans seem to have some genetic affinity; elves can, with a little magical assistance, "hybridize" with humans and "[t]he elves' dexterity with ley line magic had slipped into the human genome as if it belonged" (330). The scenario is slightly different for witches, who cannot breed with humans: "There had been a flurry of controversy about a decade ago when a nosy human in the field of Inderland genealogy got hold of the few genetic maps that had survived the Turn, theorizing that because witches could manipulate ley lines, we had originated in the ever-after along with demons. Witches are related to demons" (329-330).

the narrative than the ideas about them that circulate in the popular public sphere: the promise of understanding and healing (even, problematically, improvement, as in the "Guided Human Evolution" attempts depicted in *Fringe*) but also the threat of failed understanding and of interventions used as weapons or gone horribly wrong.

The "genetic imaginary" is also a hinge point for the series' speculative framework, making Rachel's world a universe that could almost be, but isn't quite, the technoscientific reality we currently, actually, inhabit. In this fictional world, as in our own, the discovery of the structure of DNA in the 1950s represents a significant and influential moment in modern technoscientific development. This becomes clear in a scene where Rachel, who has just quit her institutional job with the IS (Inderlander Security), suspends the action to give the reader a little history lesson on her world. As she's packing up her few belongings to leave the office, Rachel comes across her picture of James Watson, Francis Crick and Rosalind Franklin "standing before their model of DNA" (*Dead* 37). Rachel has few keepsakes and the fact that one of them is an artefact with a scientific more than sentimental association is a notable detail, underlining the importance of genetics to her personal history and to the overall narrative arc.

The history that the photo marks (the discovery of DNA's double-helical shape) is familiar, as are the names of the actors involved (its discoverers). The foregrounding here of Rosalind Franklin and Rachel's suggestion that Franklin was a witch add elements of fiction and fantasy, providing the familiar with an unusual supernatural twist.[130] But it's in the following pages, as Rachel reveals the alternate history of her

[130] Although this discovery, in the 'real world,' is commonly attributed to Watson and Crick, more recent histories have begun to acknowledge the importance of Rosalind Franklin's research and the questionable ethics that enabled Watson and Crick to get a hold of that research. Watson, Crick and Maurice Wilkins were awarded a Nobel Prize for this work in 1962; Franklin, who died in 1958, wasn't even nominated (see

reality, where we begin to see that her world and ours diverge by way of the trajectory of technoscientific development, with the science of her world turning "inward" toward genetic research, instead of "outward" to outer space (37). In a race to conquer internal biological rather than intergalactic frontiers the Americans and "then-Soviets" of the fictional 1960s (as Rachel explains) poured their money into researching "bioengineered weapons" instead of putting men on the moon, producing a "wealth of bioengineered drugs" as an offshoot (*Dead* 37). The unforeseen results unfolded like a familiar science-fictional nightmare: a research laboratory accident that spiralled into a deadly genetic engineering disaster. First, the escape of a "lethal chain of DNA" quickly but quietly killed a large number of people (37). Then a mutated virus (the T4-Angel virus), piggybacking on the DNA of a susceptible strain of "bioengineered tomato," caused mass infection, sickening most Inderlanders and wiping out a quarter of the world's human population along with much of the existing global infrastructure (37-39). According to Rachel, it was Inderlanders who kept things going in the United States during this time, preventing complete socio-political collapse and facilitating Inderlanders' subsequent bid for permanent political power (38).

Now nearly equal to humans in number, the Inderlander population enacted a supernatural 'coming out' en masse to make its existence public, inducing a dramatic socio-political change that became known as "The Turn" (38). Rachel's story takes place roughly four decades later, in an alternate twenty-first century world. Forty years after near-apocalyptic technoscientific disaster (repeatedly marked by references to humans' squeamishness about tomatoes), supernatural beings and their powers are firmly

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http://www.nobelprize.org/educational/medicine/dna_double_helix/readmore.html, accessed July 2, 2012). In the midst of her storytelling Rachel speculates that Rosalind Franklin may have been an Inderlander (37), indicating early on in the series that an individual can be both supernatural and scientific at the same time.

entrenched as part of the everyday. With this detail, as with the various Inderlander species' genetic and genomic quandaries, the narrative deeply intertwines science fiction with fantasy. The failure of the technoscientific promise of progress here also begins to unsettle assumptions about the authority and reliability of modern technoscience, particularly in contrast to what takes shape as the professional and effective domain of magic.

Magic and TechnoScience in The Hollows

If one accepts Gary K. Wolfe's suggestion that the "narrative geography" of science fiction is reason (Wolfe 23), then The Hollows might be seen to extend that "matter" to the geography of different generic frontiers, intertwining reason with fantasy in its very underlying logic and upsetting easy alignments of science and science fiction. Technoscience is crucial to the plot of the Hollows series, but also to the explanatory logic of this alternate reality and its legitimation of magic as a rational, reliable way of knowing and interacting with the world. But, importantly, this science-fictional fantasy isn't a rejection of modern, Western/Northern sciences and technologies or a rationalization of magic as strange technoscience. Rather, as the narrative speculation develops, it becomes increasingly clear that this fictional world requires both magic and technoscience to move forward into a workable future.

Technoscience provides a primary link and the key difference between actuality and fiction for these stories, as discussed above. But in the novels' counterfactual reality, where magic and previously-mythical beings have become facts of public life, and genetic technoscience has turned uncontrollably deadly, magic can come to seem a comparatively scientific, empirically reliable, and modern way of knowing in contrast. This begins, in a sense, with the series' shifting of the traditional human from

the position of dominant authoritative subject: the opening pages of book one contrast Rachel and her pixy partner to the first human they see, depicting him as inferior (worthy of "disdain"), even prey – in the supernatural neighbourhood where he wanders this "day-tripper" is likely to end up as a "snack" or "dead" (*Dead* 2). Magical beings clearly occupy a more empowered position in this universe, and where humans have lost control, the hierarchies of knowledge domains shift.

This shift is further emphasized, and widened, by the facts of fictional history. In the Hollows, the threatening potential of genetic engineering isn't a technoscientific risk but a lingering cultural memory. In a post-Turn world, genetic engineering becomes the target of fear and paranoia – this is particularly true for the remaining humans who were so badly affected by the mutated virus – and in this anxious environment genetic engineering has been outlawed. Now free from the threats of genetic engineering gone wrong, this world is also deprived of genetic science's advancements. This loss makes humans seem even more powerless in comparison to their supernatural counterparts, at least in terms of medical treatment and practice; medical research has been substantially curtailed and drugs like insulin are now only available from "illegal biolabs" (38-39). Inderlanders are less afraid of pursuing technoscientific development – the few scientists we meet in the series are, in fact, Inderlanders, involved in research as close to the legal limit as possible, or even, covertly, beyond it (see, for example, Dr. Anders in *The Good, The Bad, and the Undead and The Outlaw Demon Wails*). Yet in the atmosphere of superstitious fear that now surrounds the biosciences, magic has taken on a degree of authority and modernity at least equal to that of technology and science. In this environment, beings that can navigate both technoscientific and magical worlds – Inderlanders like Rachel – seem to have a better chance of success and survival.

The authority and reliability of magic comes through in several world-building details; the narrative persistently offers scientific and/or rational, rather than mystical, explanations for supernatural facts.[131] For example, differences between Inderlanders and humans are referred to in terms of species, vampirism is linked to a virus, and demons may be supernatural beings who live in a magical plane called the "ever after" but their access to the Hollows 'reality' is limited by basic physics – "gamma rays" or "protons" (*Dead* 299).[132] Scientific language also creeps into the narration during descriptions of the practice of magic – as when Rachel uses a "graduated cylinder" in her spell mixing (*Dead* 113), or makes sense of a spell in terms of "air molecules undergoing friction" (*Every* 266). Rachel even describes her magic as "scientific" (*Every* 355), notes she's able to "quicken" or invoke an earth magic spell because of enzymes in her blood, and alludes to what might be a law of thermodynamics (like the conservation of energy or mass or, in this case, power) to explain how earth magic works: we learn that magic doesn't create power but taps into power that exists already in living entities (see *Dead* 86-87). Harrison's novels are not unique in offering a rational explanation for magic. Nevertheless, the work Harrison's narrative is doing here in asserting the modern, even scientific, authority that magic carries is worth further examination.

The rational explanations in The Hollows don't always hold up to the scientific standards we recognize and like to see in the stories we call "science fiction," but this departure from scientific accuracy isn't just a stretching of sf's already imaginary relationship with actual science. More, significantly, these explanations are framed as

[131] To this extent, the Hollows series might be considered as part of the subset of "rationalized fantasy" that offers "quasi-scientific" explanations of magic, as discussed in chapter two.
[132] "It's something about gamma rays or protons," one character tries to explain when he notes that at sun-up demons disappear from reality and are forced back into the ever after (*Dead* 299).

reasonable – rational, but according to a slightly different framework of rationality. The narrative shifts the lines between knowledge and superstition, reason and irrationality, so that ultimately, instead of drawing these lines between science and magic, characters come to distinguish between kinds of magic and kinds of technoscience. After the disaster of the deadly mutated virus, genetic engineering is framed as arcane and irrational, while other technoscientific developments, such as digital computer technologies, appear unproblematically modern. And in the Hollows world, it's not all magic that appears mystical and unscientific but particular kinds of magic, in particular, Celtic magic – which Rachel describes as "wild," dependent on belief, and "[m]ore of a religion than magic" (*Every* 355).[133] In contrast, the magics that Rachel practices – ley line and earth magic – are institutionalized and professionalized, and depicted as reliable, modern, and "scientific." Even here, though, authority is contested ground, a site of struggle between the more masculine ley line magic and more feminine earth magic.[134] Demon magic, as practiced by Rachel, represents another site of authoritative struggle; initially depicted as both arcane and masculine, demon magic is feminized and manipulated effectively by Rachel, and as she studies and demonstrates that her skills

[133] In other passages, Celtic magic is identified as synonymous with elven magic, the series' only direct alignment of cultural and supernatural identity.
[134] Earth magic appears to occupy a domestic, feminine, and traditional domain by way of its reliance on plants, recipes and spell mixing in the kitchen, while ley line magic, used in security professions and law enforcement, is characterized as more institutional and aggressive. Take for instance, this description of ley line magic from Rachel: "It was a harsher magic, and I thought less structured and beautiful, since it lacked much of the discipline earth enchantment had" (114-115). Yet both ley line and earth magic are predictable, operating according to known principles. The practice of magic is studied and regulated in the Hollows world (requiring training, certification, licenses, insurance), bringing supernatural activities into the jurisdiction of rational order, and for Inderlanders and the few humans who live in close contact with them, magic is a mundane fact of life.

can be of benefit to her society, demon magic also begins to takes on a degree of reliable, scientific, rationality.

Shifting Binaries

In the fictional world of Harrison's novels, sciences (in plural) might be understood to include magic. Magic and Northern/Western technoscience are depicted, here, as different but compatible ways of knowing and interacting with the world. In this sense, The Hollows might be seen as an engagement with epistemology – advocating, in a way, for scientific pluralism and cognitive diversity.

Beyond the technoscientific backstory, the scientific/magical world of the novels takes up epistemology by way of the different relationships different kinds of magics and sciences have to institutional authority. These slight frameshifts indicate a kind of apprehension of the binaries of modernity/tradition and masculine/feminine underlying hegemonic notions of authoritative knowledge practices. In a world where technoscience – in the form of genetic engineering – has been outlawed, and where magic has achieved an authoritative status, alternative ways of knowing can come to seem less like Northern/Western technoscience's "others" than its necessary counterparts.

Sandra Harding, building on a now fairly well-established critique of patriarchal science, contends that Western/Northern definitions of science have relied on a narrative of Western triumphalism and exceptionalism which marginalizes empirical knowledges that don't conform to 'our' criteria of modernity – criteria that exclude the traditional, the domestic, the feminine, and so on, as discussed earlier (see chapter 1). Hence 'our' science gets cast as the only real science – modern and reliable – while 'other' knowledges and ways of knowing are coded as traditional, primitive,

domestic, feminine, even irrational or superstitious (3, 134, 173). "The science and modernity issues," as Harding writes, "are internally linked for Westerners since what the West has meant by each requires the other" (173).

The narrow view of science – by which "'science' is meant to refer only to modern Western institutions and practices" where "'modern' refers only to kinds of societies governed by the kind of rationality for which Western science provides the model" (173) – excludes many empirically reliable ways of knowing the world (multiple modernities and multiple sciences), silencing the knowledges of other cultures from which we might learn. Seeing the ways in which modernity and science are intertwined can help us recognize that there are multiple sciences and multiple forms of modernity, rather than a homogenized international modern science (187).[135]

For Harding, this shift in perspective – a challenge to the binaries of modernity/tradition and masculine/feminine underlying our definitions and understanding of science in the West/North – is primarily in the hands of postcolonial science and technology scholars and activists. Science-fictional narratives (along with criticism and analysis of such speculations) have a role to play in this interrogation and advocacy as well, not only through conscious critical work, but also through apprehending (and conveying that apprehension to readers and viewers) the reliable and authoritative potential of what Western/Northern framings of technology and

[135] Harding suggests that forms and ways of knowing outside of Western/Northern narratives of progress have the potential to enable "doings" that are also outside such narratives. This may be the offer of, for example, less exploitative / more sustainable technoscience, or of alternate narratives to Western technoscientific progress – resources we need to draw on for a successful collective future. These different ways of knowing are not meant to replace but to add to the understanding of and interaction with the world offered by Western/Northern science – for Southern communities but also for the global North. Raising issues is important for encouraging and contributing to the "public discussion and debate" necessary for "societies aspiring to democracy and social justice" (7).

science exclude. The destabilizing of modern Western/Northern technosciences like genetic engineering and the redistribution of reason and authority to magical ways of knowing and being that takes shape in novels like the Hollows series can offer a way of engaging in and contributing to an imaginative rethinking of scientific knowledge and ways of knowing.

As with the narratives discussed in chapter one, I'm not offering up the Hollows world as a model of planetary communication and interaction. These novels buy into the exceptionalist and triumphalist narrative of the West in many ways, narrowing the narrative focus, in fact, to include only the United States, and early on in the series the so-called "third world countries," having suffered the worst effects of the T4-Angel virus, get virtually written off (*Dead* 39). Furthermore, the series doesn't engage in any complex deconstruction of the modernity/tradition and masculine/feminine binaries underlying our conceptions of science; rather, it shifts the lines between the rational and irrational so that while the contents of each category are slightly different, the boundaries themselves remain virtually unchanged. In Rachel's modern world, where technoscience and magic mix, magic can be seen as an alternative science by way of a frameshift in Western/Northern rationality. That doesn't map onto our reality in any easy or obvious way; however, the shifting and challenging of boundaries in this narrative world unfolds in a popular imaginative space that exists as a legacy of, at least in part, the epistemological and generic challenges of feminist and postcolonial science fiction, articulating persistent cultural tension around public and popular concepts of science, scientific authority, and the knowledges and practices that science excludes.

A few more notes, then, on what the Hollows narrative accomplishes, intentionally or not, in terms of technoscientific and epistemological critique. For one

thing, the shifting of binaries here is subtle – this is not a revolutionary reconceptualization of science but, in the spirit of science-fictional world building, a defamiliarization of what we generally understand scientific to mean. Western/Northern technoscience has suffered a major blow in the narrative world, and its authority now faces the challenge of other forms of empirical knowledge and power that are exercised and embodied by previously marginalized nonhuman people who have revealed themselves and demanded public recognition. And although the modernity/tradition binary this scenario invokes is then reiterated and compounded within the Inderlander community – where authoritative masculine-coded knowledges (such as ley line magic) work with and struggle against more intuitive and feminized forms of knowledge and practice (such as earth magic) – this reinscription is allowed to stand. It is particularly through the character of Rachel that the series persistently upsets understandings of science as a modern and masculine exclusion of the feminine, traditional, and magical, and counters reactionary fears of technoscience.[136] Rachel, as a genetically-altered witch, embodies and eventually practices a union of the scientific and the supernatural (through earth magic, ley line magic, and demon magic) and must form alliances with the technoscientific world and the worlds of other species, in her own 'reality' but also in the magical Ever After. Rachel's story demonstrates the reliability, efficacy and modernity of alternative kinds of knowledges in coordination with modern technoscientific knowledges, complicating existing hierarchies between different ways of knowing the world.

[136] For example, Rachel is forced to reconsider her assumptions about the 'immorality of genetic engineering when she discovers that it has saved her own and others' lives (*Good*). She also gets involved in the elves' mission to repair their damaged genome (*Outlaw Demon Wails*).

Magic and Science, Ontology and Epistemology

Where Roger Luckhurst's analysis of the relationship between science and science fiction emphasizes the necessity of "displacing the term pseudoscience" (405), feminist and postcolonial criticism has sought to further displace the patriarchal and Eurocentric Western/Northern bias of sf's conceptions of what actually counts as science. With reference to Lyotard, Donna Haraway and Vivian Gornick, Robin Roberts reminds us that "[d]espite what cultural myth tells us about the objective 'truths' of science, science too is shaped by myths, by fabrications, fabulations, and stories" (4). It is in the midst of these myths and stories that feminist (and other) writers have often intervened, using "tropes of science fiction" to "reconstruct science to provide a critique of and an imaginative alternative to real-life science" (Roberts 4). Roberts's *A New Species: Gender and Science in Science Fiction* is a study of just such reconstructions, of the relationship between gender and science and the way in which science fiction can function to upset cultural assumptions and codes that see both science and sf as masculine domains. Urban fantasy is not feminist science fiction, but it does engage with some of the speculative destabilizations pioneered by feminist sf, including the empirical validation of ways of knowing that have been coded as traditional or feminine.

Historically, women's interventions in technological and scientific development have tended to entail domestic and embodied practices and ways of knowing[137] that western scientific orthodoxy defines as premodern tradition, intuition or superstition

[137] A primary reason women's contributions to science and technology have been marginalized is that much of their work has occurred in the home, amidst "the tradition of practical experiments associated with craft skills" (Rowbotham 36), or has involved the care and control of bodies, especially women's bodies and reproductive processes (see Harding 200; Adam 366-368).

(as opposed to reason and logic) – basically, ineffective magic (see Gordon 33-34).[138] Therefore, one key site of struggle in the constitution of authoritative knowledge, and a point of investigation for feminist epistemology but also speculative fiction, has been the opposition of science to magic. The hierarchal construction of knowing subjects of magic and of science has taken shape in and is woven into the generic constellations that make up and differentiate the narratives of science fiction as well as texts that, consciously or not, challenge what we understand science fiction to be.[139]

Epistemological struggles – to define and delineate knowledge, to interrogate the boundaries between kinds of knowing, and to identify who can claim an authoritative position of knowing – thus inform speculative fiction and the ways in which sf narratives frame technologies, sciences and magics. Feminist science fiction, for example, has tended to emphasize the historical relationship between science and magic, so that rather than "exposing" magical phenomena as the results of science or technology in their narratives, "feminist writers radically undermine the distinction between magic and science" (7), legitimating magic as effective practice and a kind of

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[138] See also Roberts: "Female healers offered what might be called 'alternate science' to the ill, but their methods were dismissed as magic and condemned as religiously and scientifically suspect" (7).

[139] Of course, definitions of legitimate, authoritative science, and hence, science fiction, are not strictly a gender issue. As many feminist and postcolonial critiques have argued, gender inevitably intersects "with such other economic, social and cultural features as race and colonialism," and this happens in science and technology as much as any other area (Harding 197). Underlying the processes of knowledge production and authorization that have constituted Western science, technology and technoscientific "progress" as modern and the liberal humanist individual (defaulting to the white heteronormative able-bodied male) as the primary subject of that modern knowledge and practice are the binary oppositions that frame tradition, the domestic and the feminine as modernity's non-scientific others. Harding calls for a reframing, a reconceptualization, that seeks to simultaneously disrupt "gender hierarchy in the sciences" and the "West vs. Rest hierarchy" with which such gender hierarchies intersect (210). Both must go or neither can be eliminated – as they must be if we are to collectively flourish on this (or, potentially, any other) planet.

science (8)[140] and challenging the technoscientific rationality – the "hardness" – of "masculine" science fiction. Examined alongside sf authored by women of colour as well as postcolonial and "Third World" writers, this kind of work can be understood as a form of epistemological critique, an interrogation of knowledge hierarchies that entails an interrogation of genre. What such speculation demonstrates is a reshaping of science fiction to represent and validate other knowings, other sciences.

Critics have found this kind of interrogation primarily in writing from the margins – the literary science-fictional voices and alternative epistemologies of women and "non-white" writers. A black woman author like Octavia Butler, for example, can be understood to write speculative narratives (such as *Kindred*) that are and are not science fiction all at once, and that (like the black feminist epistemology of Patricia Hill Collins) emphasize the authority of 'concrete experience' over 'abstract knowledge'.[141] Indigenous, postcolonial and "Third World" sf also frequently interrogates epistemological boundaries, merging science and technology with tradition, "myth," and magic, even asserting the empirical reality of "magical" and "supernatural" phenomena and, by extension, the efficacy and necessity of local and traditional knowings and doings.[142]

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[140] This is an intervention enabled, in part, by underlying similarities in what may motivate magic as well as science: humans' desire for agency and understanding in relation to our "natural" surroundings. As Linda Gordon has argued, "Magical rituals themselves arose out of impulses to explain and control the environment; magic and science had the same roots and may even have once been identical. Superstitions are often good examples of 'scientific' or rational magic. … To the extent that magic systematically breaks away from the passivity of the human role in most religions, it can be seen as humanistic and scientific, at least within its historical context." (33-34)
[141] This is an interpretation offered by critic Ritch Calvin, who argues that *Kindred*'s uneasy relationship with science fiction may arise from a "deliberate (and consistent) desire to expand the very definitions of 'science,' genre, and 'science fiction'" (Calvin 3).
[142] See, for example, Grace Dillon's analysis of "indigenous scientific literacies" in postcolonial sf. Indigenous scientific literacies are "those practices used by indigenous

But what happens when the speculative narratives of relatively privileged white Western women (American women writers), or the stories' small screen adaptations, also enact a kind of disruption of sf's and science's Western/Northern epistemological and ontological norms? Or when such narratives, in effect, counter chauvinistic assumptions that see only science fiction (as opposed to fantasy) as the proper narrative home of speculation about science and scientific knowledge? As with chapter one, I assert here, with my analyses of contemporary urban fantasy narratives, that engagements with science and science fiction do not necessarily have to be fully conscious or explicit in order to materialize a kind of conceptual frameshift, one that apprehends the contradictions of contemporary Northern/Western reality and that may encourage a rethinking of epistemology and genre. Interrogations of the hierarchical opposition of science and technology and the modernity they represent to magic, the supernatural and, by extension, the traditional and or "feminine," can and do surface even in fiction that is, ostensibly, purely imaginative entertainment.

Science, Knowledge, and Supernatural Bodies in True Blood

The Hollows illustrates a kind of popular engagement with epistemological issues by way of a direct, if not always foregrounded, engagement with modern technoscience and the Western/Northern rationalist epistemologies that underlie it. The epistemology of science and epistemology in general are not the same thing, yet as

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native people to manipulate the natural environment in order to improve existence in areas including medicine, agriculture, and sustainability. The term stands in contrast to more invasive (and potentially destructive) western scientific methods. And since indigenous scientific literacies are shaped by the diverse natural environments of the indigenous groups that use them, no single set of practices summarizes the possibilities" (Dillon 25). Taking the works of Canadian-Caribbean author Nalo Hopkinson as a case study, Dillon argues that such sf can "offer an alternative" to the "risk society" model outlined by Ulrich Beck, representing "indigenous technologies as pathways to sustainable existence" (26).

Helen Longino has observed, "to the extent that 'science' simply means knowledge, an analysis of scientific knowledge is an analysis of knowledge" and "philosophy of science to a large degree relies on general epistemological principles" (102). In the technoscientific ubiquity of contemporary North America, technoscientific epistemology structures much of our engagement with the world, so questions about epistemological issues often relate to the authority of modern Western/Northern technoscientific institutions. And in popular culture, our narratives often engage with technoscientific epistemological ideas without necessarily invoking the processes and practices of science.

The HBO series *True Blood* and Charlaine Harris's Southern Vampire Mysteries (the Sookie Stackhouse novels) on which the television series is based do not appear at first glance to be much concerned with science. However, like other urban fantasy stories, the series' preoccupation with knowing and, in this case, perceiving might be read as a kind of engagement with the authoritative yet contentious position of scientific rationality in contemporary North America. I would like to suggest, in particular, that the TV adaptation's preoccupation with the material, physical reality of supernatural beings and the embodied knowings they experience might be usefully brought into dialogue with certain strains of feminist epistemology that emphasize embodied knowing and the agency of materiality. These narrative representations also raise ontological issues, highlighting the imbrication of ontology and epistemology in contemporary science, philosophy and critical theory, destabilizing conceptions of the "nature" that science presumes to know.

The Supernatural vs Western Science: Embodied Knowings Multiplied

True Blood, like the urban fantasy series on which it is based,[143] demonstrates little explicit narrative interest in rational or scientific knowledge. In contrast, the story's fascination with the supernatural is overt, foregrounded in a fictional world that claims to validate the existence of characters with supernatural identities and abilities. Initially, this is limited to telepathic protagonist Sookie Stackhouse and to vampires, who (we quickly learn) have "come out of the coffin" to exist as publicly recognized members of American society. By season three, viewers – along with several residents of fictional small town Louisiana – have been introduced to a host of "irrational" characters such as shapeshifters, werewolves, werepanthers and a maenad, although the general American public remains mostly in the dark.[144] Through these supernatural characters and their activities, this TV series basks in a persistent subversion of the "natural" and "scientific." Yet, as viewers spend more and more time in and around Bon Temps, where the show is set, the supernatural becomes increasingly and materially mundane.

The public 'coming out' of supernatural or magical beings is a common world-building element in urban fantasy and paranormal romance, often hinging on questions about the rapid advancement of technoscientific knowledge and discovery – in fictional worlds much like our own, where genome mapping and CSI-like forensic science[145] have

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[143] The Sookie Stackhouse Southern Vampire Mysteries by Charlaine Harris (2001–) comprise 11 novels, several short stories, a "companion" book and, of course, HBO's *True Blood* TV adaptation.

[144] In *True Blood*, vampires have gone public but other supernatural species remain 'in the closet,' so to speak.

[145] I refer here to the popular television franchise, *Crime Scene Investigation*, which dramatizes a technoscientific mastery of evidence and investigation that defies the current capacities and budgets of the 'real world' American police forces the shows are meant to depict.

become part of the popular imagination, the difference embodied, often biologically, by supernatural characters is perpetually at risk of exposure. This scenario is made explicit in Patricia Briggs' Mercy Thompson series, where technoscientific advances influence magical and supernatural beings' decisions about whether to make themselves known or not.[146] In the Hollows, it's Inderlanders' relative immunity to the T4-Angel virus, and research into why, that provokes the supernaturals' coming out.[147] In *True Blood*, for vampires it's not the threat of exposure but the possibilities facilitated by technoscience that make all the difference. The moment at which *True Blood*'s world diverges from our own takes place two years before the narrative begins: the development and production of synthetic human blood that enables the subsequent public "coming out" of a long-hidden race of blood-dependent vampires.

Although Bon Temps isn't an 'actual' town, the world in which *True Blood* takes place resembles closely a contemporary version of the American South. Emphasizing this initial potential for realism and verisimilitude, the series opens with a reasonably typical shot of a young white heterosexual couple getting a little 'frisky' while driving in a modern SUV, and episode two even makes reference to recognizable American celebrities like "Angelina" (Jolie) and "Matt Damon" – blending the familiar into the supernatural strange. These references are important for establishing the show's representation of an alternate reality – a world that may be scientifically impossible

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[146] "About thirty years ago, the Gray Lords, the powerful mages who rule the fae, began to be concerned about advances in science—particularly forensic science. They foresaw that the Time of Hiding was coming to an end. They decided to do damage control, and see to it that the human's realization of the world's magic was as gentle as possible" (Briggs, *Moon Called* 14-15). Fae are 'out' when the series starts but werewolves are not, although they are considering the possibility because "[f]orensics, satellite surveillance, and digital cameras are making the keeping of … secrets difficult" (109).

[147] Rachel: "Our secret was on the verge of coming out by way of the what-makes-these-people-immune question …" (*The Good* 48).

based on current Western/Northern knowledge, but not entirely beyond imaginative belief, despite the existence of vampires.

The public profile of vampire citizens is a source of ongoing narrative tension, which here draws heavily on the South's history of racism and racialized violence, as well as the struggles of the gay liberation movement.[148] There is always the possibility of reading vampires and other supernaturals as racialized or queer "others" – vampires are certainly represented as being more open to a variety of sexual orientations, however, their wealth, their normative physical beauty and allure, and the power most of them seem to enjoy makes it difficult to see them as a marginalized population. Furthermore, the development of the supernatural characters, of their personalities, their emotional attachments and especially physical encounters, continually reminds us that they are not simply different or other, but are outside what conventional science and logic authorize us to know. As the dialogue and action frequently assert, vampires (and other supernaturals) are not "human," not "natural." Yet at the same time, they generally look very human and frequently do and say very human things. Vampire embodiment offers a persistent tension between sameness and difference.

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[148] For a discussion of the racial tensions embodied in *True Blood*, see Boyer (who reads the vampire in terms of difference and otherness) and Rabin (who analyzes the show's engagement with racism and multiculturalism). The series' allegorical possibilities also, obviously, include sexuality, with vampires 'coming out of the coffin' directly alluding to gays and lesbians 'coming out of the closet'. In Roz Kaveney's terms, this kind of allegorical representation is a fairly common "aspect of dark fantasy in general and its more popular, commercialized forms in particular – these are books in which the supernatural is a free-floating signifier for race and sexuality in their various forms, in the way that superpowers are such a signifier in Marvel comics" (220). Kaveney also notes a 'domestication' in the representation of supernatural beings in dark fantasy; this might be seen to further emphasize seeing vampires and the like as a kind of human. See also Kari Maund, who argues that the contemporary settings ("recognizable urban environments") and borrowed "tropes" (such as the "hero-as-detective") of current fantasy series "normalize" the "fantastical elements" such as "vampires, werewolves, magic" (151).

Despite the difficulty of accounting for vampires in rational terms, in Harris's and *True Blood*'s fictional universe modern American society has tried to adopt a logical, scientific explanation of vampire existence, attributing their difference from ordinary humans to the effects of a virus. The Sookie Stackhouse novels present this public discourse as an unconvincing attempt to rationalize the supernatural – so unconvincing, in fact, that the TV show doesn't really develop the idea. Even the technoscience that made the vampires' "coming out" possible is exoticized rather than presented in conventional Western/Northern terms – the development of synthetic blood, marketed as a product called "Tru Blood," is repeatedly attributed to the Japanese, so that the East rather than the West is cast as having an affinity with, or understanding of, the supernatural *and* the technoscientific. In season four, this exoticization of supernatural science takes a slightly different angle, to the point where even historical Western scientific achievements are brought within the domain of the supernatural. In a flashback scene featuring two vampire characters, we learn that the development of synthetic blood is a transnational, scientific, vampire enterprise, and even historical scientist Louis Pasteur turns out to be still-living a vampire.[149] This removal of advanced technoscience from the domain of ordinary humans echoes the way in which the actual practices, process, and complex theoretical dimensions of contemporary technoscience are far removed from the everyday experience and understanding of the average Western citizen.

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[149] See clip from 4-2, http://www.youtube.com/watch?v=-QpLVVEo2gU: Nan: "Right now, on three different continents, the most brilliant scientific minds in our community, including Louis Pasteur, by the way, are working on synthesizing… he is close … to synthesizing human blood, real human blood, made in a lab, that we could survive on…" (accessed June 25, 2012).

The series also highlights humans' (or, more precisely, Americans') need to rationalize the paranormal and does so via main protagonist Sookie Stackhouse – the human-seeming telepath who, we eventually learn, has hereditary fairy blood.[150] In the novels, Sookie spends considerable time outlining other people's denials of her telepathy; they call her "crazy," "retarded," or explain that she's simply good at reading body language, instead of admitting she can hear people's thoughts.[151] The TV series covers similar ground briefly in a flashback sequence shown in episode two, coinciding with Sookie telling her vampire lover, Bill, that she was diagnosed in childhood with ADD (attention deficit disorder). But both on screen and in print, rational, scientific explanations prove insufficient and unconvincing. Ultimately, the only reasonable explanation for vampires and other supernatural creatures is that the world holds a lot more than conventional Western/Northern science has allowed us to describe.

That this is a matter of unattainable rather than unachieved knowledge in Western scientific terms is suggested in season one, episode three, where the vampire named Bill tries to explain his life-like state to Sookie. Understanding the mechanics of biology doesn't explain the mystery, or "miracle" of life – vampire or human – Bill insists.[152] In this framework, the reality of "magic," as he terms it, resists scientific investigation, experimentation and explanation. Susan Peppers-Bates and Joshua Rust discuss this scene in *True Blood and Philosophy*, where they read characters such as Bill

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[150] Here telepathy functions differently from how it functions in *Fringe* and Ghostwalkers. In this context, Sookie's telepathy is not a marker of human evolution but of hybridity – posthuman in a conceptual rather than literal sense, in its challenge to orthodox definitions of humanity and to anthropocentrism.

[151] See the opening chapters of *Dead Until Dark*. These words are also used by a couple of unpleasant bar patrons to describe Sookie in the first episode of *True Blood*.

[152] Religion is a persistent undercurrent in the show, suggesting that the tensions between spirit and science might be easily read in terms of contemporary political struggles between science and religion in the U.S. The religion of vampires becomes an important issue in season five, which is just beginning as I write this chapter.

in relation to modern disenchantment – the movement toward physical rather than supernatural explanations of phenomena (188).[153] Peppers-Bates and Rust interpret Bill's attribution of consciousness and animation to "magic" as a kind of extreme scepticism about scientific naturalism and an extension of Cartesian dualism (194). But Bill's understanding of epistemology as well as ontology, and the philosophy underlying the series in general, emphasizes bodily senses and affects rather than consciousness – not "I think, therefore I am," but "I am because I *feel* and I *sense*." This sensory validation of reality contests notions of Western/Northern scientific objectivity and knowledge accumulation (positivism, empiricism, rationalism) that rely on removing the personal and the body from processes of observation, measurement and knowledge production. These 'insights,' as we might call them, resonate with the insights of feminist epistemology, which reveal significant limitations in traditional epistemology: as feminists critiquing traditional Western/Northern epistemology have argued, bodies matter.[154]

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[153] This is one of several definitions of disenchantment the critics offer, and the one most relevant to Bill's dialogue. I will return to notions of dis/enchantment in the conclusion of this chapter.

[154] As Samantha Frost asserts, "Descartes's portrayal of the body as essentially unthinking underpins the modern understanding of the human self as a rational, free, and self-determining agent" (Frost 72), thus "[t]he knower in traditional epistemology is not only an individual knower but is disembodied as well; reason is presented as purely mental" (Adam 368). According to such frameworks, reason is idealized as free of the body, scientific knowledge is depersonalized as well as disembodied, and the body, still "closely associated with women and the feminine," is the "*unacknowledged condition* of the dominant term, *reason*," of, in fact, the constitution of "reason" as a privileged term in binary oppositions like mind/body, culture/nature, self/other, reason/passion (Grosz 195). Feminist theorists, in contrast, insist on the importance of the body in the production of knowledge, much of their work refuting essentialism and critiquing philosophies [that] transcend the body, as part of the leitmotiv permeating Western rationalist philosophy of the triumph of reason over nature, which feminism rightly views with suspicion" (Adam 369). See, for instance, Alison Adam's discussion of how Cartesian mind/body dualism has informed research in artificial intelligence. For more historical discussion of the depersonalization of the ideal scientific observer see,

The reality of the supernatural in this fictional world is in the sensory evidence of its existence. For the characters, verbal and visual proof are less important than touch, scent and taste, although television viewers, of course, must rely on the sights and sounds by which other senses are conveyed. Consistent with much contemporary visual media, *True Blood* is rife with sensory stimulation, almost to the point of overload, but in a visceral, sensual way that may engage rather than pacify the show's audience. Like the paranormals of Christine Feehan's Ghostwalkers series, supernatural characters like Sookie, or the shapeshifter Sam, are to some extent socially disabled by their "unnatural" difference, a point of identification for viewers aware of the difficulties and challenges of navigating contemporary social spaces and situations. For a character like Sookie, difference is compounded by the "extra-sensory" part of telepathic perception, making it hard for her to interact normally with the people around her whose thoughts she can hear. With overwhelming psychic stimuli focalized through the show's protagonist, *True Blood*'s dramatizations of paranormal ability mutually implicate viewers and fictional characters in the experience of embodied perception and the knowledge it imparts.[155]

Embodied knowing takes on multiple forms by the third season of *True Blood*, when it's not just ordinary humans, the public vampire citizenry, and Sookie that are coming up against and demonstrating a different experience of the world, but also shapeshifters, were-creatures and humans with affinities to traditional magical powers (witches, shamans, etc.). Physical contact, especially sexual, and the exchange of blood

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for example, Daston and Gallison's discussion of "mechanical objectivity" in the nineteenth century or Haraway's discussion of the historical development of the "modest witness" in seventeenth-century England.

[155] This is demonstrated in the scene that introduces Sookie (1-1), where viewers experience the sound of the busy bar and grill, as well as customers' thoughts, from Sookie's perspective as she moves around taking orders and waiting tables.

represent primary means by which such characters can know each other and step outside of their conventional, rational (in Western/Northern terms) understanding of the world. Drinking vampire blood, for instance, has healing effects but also allows characters such as the humans Lafayette and Jesus to glimpse their traditional, magical ancestors (3-10), or enhances the senses, allowing Sookie to taste the embodied history of the pig who went into her breakfast sausage (1-2). Vampire blood may act as a catalyst for other supernatural powers, such as speeding up and strengthening the collective (and domino) effects of werewolves' change from human to animal form (3-4). It is also credited with enhancing libido and the pleasure of sex (vampires, visibly, make great lovers). Sookie's fairy blood is what allows her to read minds and what gives vampire Bill a glimpse of the way to faery after he drinks a large quantity of her blood (3-10). And it's the sharing of blood that creates psychic but embodied ties between Sookie and Bill, as well as Sookie and another vampire, Erik;[156] on this kind of ground Erik can fantasize that Sookie is able to know his long embodied history and memories, smelling them on his skin and reading them in his blood (3-4). A similar sharing of embodied information actually does take place between Sookie and Bill soon after they meet and have exchanged blood. While out for an evening walk, Bill – an old fashioned Southern "gentleman" who was alive to fight in the American Civil War – requests that Sookie let down her hair. He asks, "May I?" and at her nod reaches out to touch her blonde locks and her neck, saying softly, "I can smell the sunlight on your skin" (1-2). Sookie embodies her lived experience in a way that can be perceived through physical senses, like smell and touch, by someone else.

[156] This is a general side effect of vampires sharing their blood.

The paranormal and supernatural are made real, even mundane, in *True Blood* by their capacity to be registered by *ordinary* sensory perception and through their embodiment in intensely physical, material characters. As characters share memory and knowledge through touch, smell and taste, these embodied relations and relationships begin to break down the certainty of stable classifications and barriers between individuals, offering characters a different view of the world. In so doing, these interactions and interrelationships blur the lines between natural and *super*natural, between scientific and embodied reality, objectivity and subjectivity, reason and irrationality. And it's the show's ongoing focus on physical contact, on the visceral shots of blood and bodies, that make alternative knowings seem possible, reframing the supernatural within a knowable domain.

True Blood doesn't try to naturalize the supernatural in Western/Northern scientific terms (unlike the texts discussed in chapter one). Rather, this series brings Western/Northern science and the "nature" it purports to describe into the domain of embodied, magical reality.[157] In *True Blood* the supernatural can be registered in some ways using scientific measurements – Bill claims to have no brain waves, breath or heartbeat, and the absence of these things in a supposedly living man would provide proof of his difference (1-3). But it's not these scientifically measurable negative phenomena that emphasize the material plausibility of supernatural reality here. *True*

[157] Nevertheless, the unnaturalness of magic and the magical otherness of supernatural characters are always in negotiation in this kind of narrative representation. Although we are frequently reminded of the magical things many of the characters can do, depictions of these manipulations of "nature" are often clunky, even cheesy – more parlour trick or optical illusion than mystical talent, and many supernatural characters seem to be made 'super' more so by off-camera time spent at the gym than by magic. This produces a perpetual back and forth movement between imagination and reality, narrative speculation and actuality. (Thanks to Valérie Savard for drawing my attention to the carefully trained and sculpted perfection of these onscreen bodies.)

Blood revels in the sensual and sensory knowledge gained by bodies, especially bodies in contact, so that its proliferation of bodies and beings transforms the supernatural into something biological, material – something very conceptually real. The weight of embodied experience, entwined with embodied knowing, constitutes reality for these fictional humans, vampires, werewolves, shapeshifters and telepaths alike. 'I *am* because I *feel*, 'becomes, 'I *know* because I *feel'*. And ultimately, in *True Blood*, this is as real as it gets.

Speculative Narratives, Speculative Epistemologies

The readings of The Hollows and *True Blood* I offer here are available through critical analysis. Most readers and viewers may give little conscious thought to the narratives' engagement with technology, science and epistemology. Nevertheless, the ways in which science, modernity and authoritative knowings shift ground in these stories offers a kind of creative imaginative potential for critical speculation, a slight shift in perspective to facilitate seeing things otherwise. These are counterfactual worlds, but such narratives, I would suggest, can act as a reminder that science fiction isn't just about what we easily recognize as science, that science can come from unexpected places and in unexpected packages, that empirically reliable knowings can emerge outside the lab. In these stories, the distinctions between technoscience and magic, science and the supernatural, do not map easily onto the lines we generally draw between fact and fantasy, reason and irrationality, the modern and the primitive, even human and nonhuman. But in a way, that's the point. And it requires a flexible framework for discussing the situated relationships between genre fiction and science to recognize this kind of work when we find it.

To examine The Hollows and *True Blood* series in relation to science fiction, feminist epistemology, and postcolonial and feminist science and technology studies, is to recognize the fluidity and provisionality of genre boundaries and to acknowledge that the "science" in science fiction and science fact is a contested term. Reading the science fictionality in such speculation also entails pluralized and more heterogeneous definitions of technology and science, seeing these labels as powerful but contingent and situated terms, legitimating some knowledges and practices while marginalizing others. This is not simply a matter of revealing how scientific consensus consigns discarded theories and possibilities to the illegitimacy of "pseudoscience," the angle used as a starting point in chapter one. Rather, my interest here is in how representations of magical and supernatural ways of knowing and doing that are reliable, effective and materially real point, if sometimes indirectly, to marginalized feminine and "Third World" alternatives to Western/Northern scientific knowledge, but also to the "modern" reality crisis that reminds us we need such alternatives.

Reason (in its modern, humanist, Western/Northern manifestation) has been in "crisis" for some time now, marked by a failure of "rationalist and empiricist approaches to knowledge" (Grosz 188), "the mismatch, conflict, or displacement between 'objectivity' and 'subjectivity'"; "a crisis of identity, of modernity, of capitalism, of morality, and even of science"; "a crisis of reason's *inability to rationally know itself*" (189, original emphasis). Framed in these terms, the crisis of reason might also be understood as a crisis of boundaries, part of a larger cultural quandary caused by the breakdown of boundaries that may once have seemed stable. Or, to put it more accurately, it has become increasingly difficult to ignore the fuzziness and mutability of boundaries that were never all that clear and firm in the first place.

The central term in this crisis is, for Bruno Latour, not *reason*, but *modernity*. We are experiencing the failure of the "Modern Constitution" because the processes by which we "moderns" (as "we" in the West, or global North, imagine ourselves) construct our own modernity are not in balance: our efforts to fabricate "pure" ontological categories such as those between "modern" and "premodern" or nonhuman nature and human culture, or subject and object, can no longer keep up with the proliferating complexity of technoscientific development – the networks of natural-cultural, human-nonhuman hybrids ("quasi-objects" and "quasi-subjects") that make up our contemporary technoscientific and sociopolitical collectives. As the processes of "translation," as he calls them, can no longer keep pace with the processes of "purification" it has become increasingly difficult, if not impossible, to sustain belief in the old promises of reason and enlightenment: emancipation through technoscientific progress and political revolution.[158]

A further implication of this boundary trouble involves an increasing understanding, at least in some quarters, that definitions of science and technology, like definitions of modernity, are historically and culturally contingent and reliant on processes of differentiating binary opposites, on notions of what these things are not, as I have discussed throughout this chapter.[159] We conceptualize "modern" Western/Northern technoscience as "reasonable" and "rational" by framing alternative knowledges and practices, such as tradition or magic, as "unreasonable" or "irrational,"

[158] See *We Have Never Been Modern* sections 1.4 and 3.1, for example; I return to Latour in the following chapter. As I discuss there, there are sexist and racist dimensions to "modern" processes of purification as well; scholars such as Donna Haraway (*Modest_Witness*) and Sandra Harding (*Sciences from Below*) have offered insightful critiques of this blind spot in Latour's analysis.

[159] For Sandra Harding, the modern/traditional (or "modern"/"premodern") opposition – also framed as West/East and North/South – along with the masculine/feminine binary pair, underlies hegemonic definitions of "science" (*Sciences from Below*).

even "superstition." Yet even these boundaries cannot hold up under rigorous examination. The Age of Reason, of modern scientific Enlightenment and technological progress, may be understood to entail the disenchantment of human knowledge and understanding, distancing "modern" societies from the "premodern" past.[160] Yet these notions of difference are but "myths" of disenchantment – just one more dimension of the processes of purification and translation by which we fabricate epistemological and ontological certainty. "How could we be capable of disenchanting the world," asks Latour, "when every day our laboratories and our factories populate the world with hundreds of hybrids stranger than those of the day before?" (115).[161]

The crises of reason, epistemological and ontological uncertainty, and dis/enchantment are frequently understood to be scholarly concerns,[162] often associated with academic postmodernism and poststructuralism. Nevertheless, the instability of the metanarratives of enlightenment, progress, scientific discovery, and truth (among other "grand" stories) resonates in the larger public sphere as well, shaping and informing the speculations of popular culture in matter and form. In our contemporary context – where technoscientific progress has been seen to produce

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[160] As Latour points out, this differentiation is not only motivated by "arrogance" but may also be an expression of "despair" with the conditions of modern life (*Modern* 114).
[161] While we continue to imagine that our modernity was forged by the "invention of humanism," the "emergence of the sciences," the "secularization of society" and the "mechanization of the world" (Latour, *Modern* 34) rationalization and secularization have not "disenchanted" the so-called "modern" world (as Max Weber once proposed). See also Latour's discussion of our *unreasonable* efforts to distinguish the rational and irrational in *Politics of Nature* (94).
[162] Grosz for example, discusses the implications of the crisis of reason in terms of academic disciplines in the humanities, social sciences and natural sciences. Similarly, the "crisis of critique" described by Latour has political dimensions but is presented in the context of a scholarly problem – the contradictions and limitations of academic criticism that focuses too exclusively on understanding phenomena as natural, or social, or discursive (*Modern* 5-8). He apologetically offers E.O. Wilson, Pierre Bourdieu, and Jacques Derrida as "emblematic" of these analytic "tacks" (5).

disasters as well as miracles, to create new problems while solving old ones[163] – the non-scientist public can hardly be blamed for turning the sceptical 'enlightened' gaze back on the institutions of Western/Northern technoscientific rationalism, or seeking answers from outside "modern" humanistic frameworks. Similarly, the general public can hardly be faulted for becoming enchanted by the strange hybrids Latour remarks upon, of losing sight of the rationality of increasingly miniaturized technologies or of increasingly invasive biomedical interventions and their often irrational global sociopolitical and cultural implications.[164]

The outcome of driving the rationalist scientific project as far as we can seems to transcend rationality. The kind of narrative that's best equipped to help us conceptualize and cope with this reality, as author Karl Schroeder contends, is the fantastic – science fiction and fantasy. Schroeder's claim contains the implication that the world we find ourselves in demands a serious intermingling of both science and fantasy so that in speculative fiction we may find the basis of a new kind of realism.[165] This is the basis on which we can find a kind of science-fictional, fantastical realism in

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[163] This is exacerbated by contemporary science reporting, which seems to present an ongoing stream of contradictory information, obscuring how sciences are actually practiced and the processes by which knowledge is produced. See the discussion of responses to the "truthiness" of science in Chapter 1.

[164] Such as perpetuating and widening the divide, globally, between the 'haves' and the 'have nots'.

[165] I draw here from Schroeder's 2009 guest address to the Academic Conference on Canadian Science Fiction and Fantasy. Among a wealth of recent claims for the realism of science fiction, Schroeder's is uncommon for his interest in the potential realism of fantasy as well. In this particular talk, the technoscientific 'insight' countering common sense that Schroeder raised was leading-edge cognitive science suggesting that consciousness is secondary to action, making humans' sense of our own agency an illusion. (Peter Watts engages with this quandary insightfully in the science fiction/fantasy hybrid *Blindsight*, 2006.) Schroeder's response was not to abandon notions of agency and will, but to expand them beyond consciousness, in a "rewilding" of the world that resonates with the magical ontologies of fantasy fiction. (I return to expanded notions of agency in chapters four and five.)

contemporary urban fantasy. Urban fantasy series such as the Hollows and *True Blood*, in their mixing of genre world(view)s and knowledge worlds, apprehend the complexities and contradictions, the rationalizations and enchantments, of contemporary Northern/Western realities. And in doing so, in reframing both the supernatural and technoscience, they gesture toward the possibility that practices and ways of knowing outside the boundaries of Western/Northern institutional structures might be considered sciences as well, creating a potential imaginative (time)space for exploring the limitations and the possibilities that emerge when different knowledge worlds collide and combine.

CHAPTER 4: Generic Affinities and Posthumanist Critique

From Modernity to a Posthumanist Condition

Science fiction is a cross-media phenomenon. Because form and content are closely entangled, texts express their generic identities differently in different media and work through the ideas they engage with in different ways.[166] This is demonstrated, for instance, by the way in which the bodies of the actors performing as vampires and other supernatural beings in the television series *True Blood* can foreground sensory experience and its relationship with knowledge in a way that exceeds the physicality of embodied knowing available to Harris's novels. Nevertheless, beyond significant differences in form (and forms' differential shaping of intent, or emphasis), science fictions (science/fictions) across media may share ideological resemblances and generic affinities (see chapter two, and more to follow). Ideas and ideological commonalities surface too as relations between seemingly distinct genres (as in the science-fictionality I identify in urban fantasy), as well as between genre fictions and non-fictional commentary and representations – as this chapter explores.

These commonalities exist because the ideas, the cultural ideals and anxieties that find expression in science-fictional texts are not exclusive to form, to 'pure' genres, or even to fiction, but emerge from much larger webs of shared discourses and worldviews – overlapping frames. Amidst these webs of framings, at least in North America and Europe – and entangled with notions of science, technology, and technoscientific progress – the modern Western/Northern worldview still predominates, with all its Euro-, andro-, anthropo- and other -centrisms, however much they have, rightfully and to some extent productively, come into question. It is within

[166] Thanks to Susan Fast for helping me clarify my argument in this and the following paragraph.

this conceptual/experiential (intermingling of) world(s) that the science-fictional narratives I analyze in this thesis take shape and circulate, so that the engagements with technology and science they enact are inevitably informed by and respond to Western/Northern notions of technoscientific modernity but also the ways in which these notions have been subjected to critique.

The "modern" worldview and the "rational human" who is its subject of knowledge have developed in co-evolution. The cultural narratives that would explain this development – of modernity and the modern human – tend, among other traits, to valorize the scientific and technological quest for ever-greater knowledge of and mastery over the 'natural' world. It is this view of inevitable technoscientific progress that informs the technological and scientific optimism of much Golden Age science fiction. It is also the worldview against which dystopian and/or technophobic speculative fictions, and (including) many feminist and postcolonial science-fictional critiques, react. In triumphalist narratives of progress (fictional and otherwise), scientists play the role of discoverers,[167] neutral mediators of the Enlightenment, bringing to the rest of us understanding about the natural world and the technological tools with which humans can access and change it. Such stories also then imagine a world in which those who don't embrace the modern interpretation ("understanding") of nature and science will inevitably be left behind.

This attitude toward the natural, the technological, the social and the temporal has not only dominated scientific thinking and communication but also, in the era we commonly call "modern," the broader ontologies and epistemologies by which "modern" life is organized and understood. The modern worldview has thus necessarily

[167] A role initially reserved for men only (see Haraway, *Modest_Witness* (26-35).

informed public and popular conceptions of science, technology, society and the natural world. However, awareness of the inequalities such a framework engenders circulate as well, and the coexistence of these perspectives informs the complexity and contradictions of popular cultural production. It is this complexity of pop cultural engagements with hegemonic framings of ideas about science, technology, modernity, and humanity that I have found and traced in *Fringe*, in Ghostwalkers, in the Hollows, in the Sookie Stackhouse novels and *True Blood*, and which I will continue to examine in the following chapter, with my discussion of the *Sanctuary* and Quantum Gravity.

I have referred repeatedly throughout this thesis to the quandaries, contradictions, and irrationalities of contemporary Northern/Western existence. I will develop this topic even further in the subsequent chapter, returning once again to popular cultural media productions in print fiction and television. But here, in this chapter, I would like to imagine another framing through which the contemporary dilemmas I have insistently cited might be summed up and approached – as a posthumanist condition[168] analyzed through a critical posthumanist lens. In the terms of Bruno Latour, the difficulties of the current cultural moment might be described simply as the failure of the Modern Constitution, whose processes I discussed briefly at the end of the previous chapter. However, I have also noted (and will discuss further) how

[168] I would like to distinguish my use of the phrase "posthumanist condition" – informed by science and technology studies and postmodern theory but also feminist, postcolonial theory and animal studies – from Robert Pepperell's "posthuman condition." Like Pepperell, I wish to register the ways in which our thinking about the "human" have changed, and a particular relationship to humanism, although I don't see this relationship as a matter of linear temporality (see below; cf. Pepperell iv, where he defines "posthuman" as "after" humanism). However, Pepperell's emphasis on consciousness and, ultimately, on the "convergence" of biology and technology as "increasingly indistinguishable" (iv) is, I feel, too narrow and Western-centric. I am also a little wary of the excitement implied in phrases like: "we are nearing an awareness of the energy of existence — there is the tangible crackle of a storm in the air" (iv). Posthumanism, as I note elsewhere in this thesis, is an ambivalent phenomenon.

notions of modernity and humanism (and science) are deeply intertwined. Latour's analysis acknowledges this imbrication, even as his terminology emphasizes periodicity (while his assertion that we are actually "nonmodern" negates it), and though there are temporal dimensions to contemporary cultural confusions, it's not just modernity but liberal humanist conceptions of rational, enlightened humanity, and to some extent the technoscience ostensibly supporting both, that are working rather poorly. Based on my research, my readings of theory, criticism, popular news, and pop culture narrative – and the generic affinities (affinities in framings) I find in these discourses – what many of us are apprehending, here in North America and Anglo Europe at least but throughout much of the West/ North, is a kind of heterogeneous and incomplete condition of posthumanism – a conceptual/experiential relation to a space-time in which many aspects of our familiar (modernist and humanist) world framings have become decidedly frayed. As the voices and images of postmodernism have repeatedly told us, it is difficult to remain certain about the conceptual "truths" on which the frameworks of Western/Northern culture is based. But "postmodernity" doesn't go quite far enough in explaining what's gone wrong, and where we can go from here. Posthumanism, I argue, registers as a condition and a critical perspective by which anthropocentrism, modernity, and Western/Northern technoscientific triumphalism have been and can be seen to be destabilized.

Posthumanisms and Temporalities

Posthumanism, as an experience of living amidst increasing challenges to humanism and the anthropocentrism humanism entails, is a partial, variously experienced, even beyond-postmodern condition, as I have already suggested.

Making sense of this experiential reality, and engaging in critical and activist interventions against the social injustices that contemporary technoscientific reality engenders, entails a reconceptualization of time. Posthumanism resonates not just with the conditions of the current sociocultural moment but with ideas of polytemporality,[169] a pluralizing of our understanding of modernity and the timeline that supposedly led us there. As I discussed in the previous chapter, by way of Sandra Harding, in the (historical) West and (global) North, we have tended to see one kind of modernity (ours) and one progressive path to get here, consigning other cultures to a status of premodernity – or seeking to bring them into modernity on our terms. Pop culture media texts like the Hollows series and the Sookie Stackhouse mysteries (*True Blood* included) apprehend some of the delimiting effects of this framing of modernity and the possibility of modernities in plural, while a TV show like *Fringe* complicates singular modernity by introducing the existence of parallel worlds and timelines. In other texts, such as the futuristic fantasy of Justina Robson's Quantum Gravity series (which I analyze in the following chapter), our framings of time, including ideas of linear progression, are revealed to be as anthropocentric as our conceptions of knowledge and being (*Fringe* gestures in this direction as well, though in a less developed way). Temporality, as it turns out, can also be seen as partial and plural.

The lines drawn by the hegemonic Western/Northern framing of temporality are not just apprehended but explicitly recognized by many postcolonial, feminist and other critics who actively complicate it, contest it. Judith Butler, in *Frames of*

[169] Latour imagines temporality more in the shape of a polytemporal spiral (*We Have Never Been Modern* 75).

War for example, acknowledges that it may be valid to describe different cultures in relation to different modalities of time but points out how linear notions of "pre-modern temporality" have been produced in order to define and legitimate "hegemonic conceptions of progress" (102).[170] For Butler the issue is not a matter of pluralizing temporality, so we can recognize "different temporalities in different cultural locations"; rather, it is a problem with our narratives of progress that create artificially bounded geopolitical space(time)s that oversimplify notions of community and difference (103). Yes, she acknowledges, "temporalities conflict and converge" (133), but instead of simply reframing all peoples, all cultures as "modern," we need to "resist[]" and "refus[e]" such "developmental narratives" and "unified frameworks" (133). It is the unified frameworks of time, then, that are at issue.

Though situated much differently from Butler, Bruno Latour similarly resists narratives of linear temporality; he also opposes the common and ideologically powerful conceptual frameworks of radical, or revolutionary, historical rupture that position 'our' present as entirely unique.[171] Again, such exceptionalism fuels images of

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[170] Cf. *Modernity Disavowed: Haiti and the Cultures of Slavery in the Age of Revolution*, where Sibylle Fischer's history of the early nineteenth-century Haitian revolution reveals and contests the ways in which "canonical histories" of modernity/revolution exclude what was going on in the colonies that economically supported the rise of the bourgeoisie (7), and thereby demands a rethinking of modernity/liberty/progress and how they were negotiated (vxi).

[171] According to the 'modern' conceptualization of flowing time, the present is a break with the past (*We Have Never Been Modern* 72); further, all things that presently exist are seen to belong to the same time, or surface as anachronistic exceptions (73). An excess of exceptions causes a temporal whirlpool, of which postmodern pastiche, or mixing of items from multiple periods, is but a symptom (74). Latour proposes, however, that time is not a "general framework but a provisional result of the connection among entities" (74), connections that gather in the shape of a spiral rather than a line (75). All points on the spiral may be close or remote depending on whether

an enlightened, civilized modern era as compared to a supposedly unenlightened and uncivilized premodern world, or set up, for instance, the idea of the industrial revolution as the destruction of a pastoral, agrarian culture – incomplete and reductive conceptualizations of the relationship between present and past.[172] Scholars have gone to great pains to explain what sets modern society apart from the past, or, more recently, what sets off the 'postmodern' late twentieth and now twenty-first century from the 'modern' period. This is important work; as Haraway insists in *Modest_Witness* there is urgency in recognizing the particularity and specificity of contemporary technosocial relations however much we must also seek to understand continuities with the past. Latour's emphasis in *We Have Never Been Modern*, however, is to unravel the exceptionalism with which we view the current stage of human technosocial development.

Latour goes as far as to suggest that "we have never been modern," that modernity as we know it is merely the "official representation" masking the continuity between the 'premodern' past and 'modern,' or even 'postmodern,' present (*We Have Never Been Modern* 132). From this position, he contests common definitions of modernity as the period after the Enlightenment, characterized by the emergence of humanism, the sciences, secularization, or mechanization (34), and challenges the assumption that the 'developed,' Western nations represent a fundamentally distinct modern world (97). Establishing ourselves as modern in this way relies on the

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you sort them according to the short distances from loop to loop or the longer stretches of curved windings, but there are no anachronistic atavisms or revolutionary ruptures (76). Our understanding of a particular time then takes the shape of the sorting, how we choose to view the connections, rather than the sorting adhering to a comfortably orderly linear temporal frame (76)

[172] Latour's opposition to such images is certainly not unique. Raymond Williams, for example, critiques the latter of these perspectives, along with orthodox Marxism, in "Culture is Ordinary."

construction of exaggerated or misdirected distinctions between not just the present and the past, but between (as Butler suggests) different regions and societies, and encourages the 'modernization' (i.e., destruction) of what gets labelled as "premodern" difference (Latour 130-131). Such framings inform intercultural discourse even in the public and popular spheres, feeding into the stories we tell about cultural difference – as in Rachel's characterization of unfamiliar Celtic magic as "wild," archaic and unscientific in the Hollows, in contrast to the more empirically reliable and predictable practices of modern earth and ley line magic, but also in the way the narrative more or less writes off the "Third World" as being completely decimated by plague without engaging with the politics of why.

Both Butler and Latour, among others, resist the idea of extending modernity to all cultures in favour of deconstructing the concept as it currently operates – culminating narratives of developmental progress. However, as I indicated with my discussion of Sandra Harding's work in the previous chapter, other scholars fighting for democratic practices in planetary sciences may be more likely to take up 'modernities' in plural as a lever for productive activism. It's not an all-embracing homogenizing modernity they're seeking but rather recognition of alternate, diverse conditions and experiences of modernity in plural. In the case of Harding's scholarship, pluralizing modernity can be seen as a necessary step in the task of pluralizing and democratizing sciences, in recognizing that other cultures outside the North/West have knowledge and resources that are crucial for building successful collective futures (187). To this end, in *Sciences from Below*, Harding urges more dialogue and cooperation between science studies scholars in the North/West and postcolonial and "Third World" science studies scholars. Identifying Latour, Ulrich Beck, and Gibbons, Nowotny, and Scott as

Northern STS scholars who have found productive ways of problematizing hegemonic conceptions of modernity, Harding situates their work as a kind of entry point for bringing postcolonial STS into the conversation.

Modernity and science, then, are intertwined, so that contesting notions of a singular or homogeneous universalized science requires de-universalizing modernity as well. As there are multiple sciences, there are also multiple forms of modernity. What makes this a posthumanist insight is that it presents a challenge to the seemingly "natural" alignment of Western/Northern modernity, rationality, science *and* humanity. I have found a similar, if less critically nuanced and sophisticated, disalignment in the science-fictional worlds I have analyzed in the previous chapters. Critiques of modernity, of science, and (as I will discuss) of anthropocentrism have generic affinities with the framings of modernity, science and humanity in fantastical science fiction and science-fictional fantasy.

Post/humanities and the Framing of Modernity and Science[173]

Framing is a useful concept for analyzing how genres work, as I discussed in chapter two. It is also, by way of scholars such as Erving Goffman and Judith Butler, a helpful image for discussing our cognitive, perceptual, and sociocultural investments in viewing and understanding the world in certain ways, as well as for discussing the histories and the collectives we belong to that make such viewings

[173] Again, my typography follows Graham, who, as noted earlier, uses the term "post/human" in order "to suggest a questioning both of the inevitability of a successor species and of there being any consensus surrounding the effects of technologies on the future of humanity" (11). I agree with Graham's questioning impulse but am gesturing here towards not just the *posthuman* (in its multiplicitous interpretations) but also multiple versions of *posthumanism* and the *posthumanities*.

and understandings possible.[174] Posthumanism is itself a framing, a way of making sense of contemporary existence, or at least of registering some of the implications of contemporary life. In critical and cultural theory, posthumanism can function as a diagnostic and philosophical tool, a way of world-mapping the contemporary heterogeneity and multiplicity in the space-times we currently inhabit. In the popular sphere, engagements with the posthuman, and even more so with posthumanism, can facilitate an apprehending of some of the limits, constraints, and problems entailed by the traditional modern and humanist (and Western/Northern technoscientific) worldview.

We don't all share the same primary frameworks. And, as Goffman points out, even among groups with shared primary frameworks there is an "incomplete sharing of cognitive resources. Persons otherwise quite similar in their beliefs may yet differ in regard to a few assumptions, such as the existence of second sight, divine intervention, and the like" (27). Because of the overlapping and incompleteness of the frameworks and imagined worlds[175] through which we make sense of knowledge and experience, issues of belief and truth, faith and proof, become highly contentious issues. Hence the emergence during the Enlightenment of a particular "modern" form of objective observation, which could, at least in certain (Western, masculine) contexts, attest to a kind of scientific reality.[176]

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[174] Cf. my discussion of genre worlds in chapter two, in particular Barbara Herrnstein Smith's engagement with Ludwik Fleck's concepts of thought styles and thought collectives.
[175] There are also ways in which ideas about frameworks and framings, thought collectives and thought styles, resonate with Appadurai's work on imagined worlds.
[176] The "modern" development of scientific objectivity has received a great deal of scholarly attention, some of which is addressed by Bruno Latour in *We Have Never Been*

Bruno Latour looks at this emergence in *We Have Never Been Modern*, using his retelling of the story (bringing non-human witnesses into the account) to reveal a set of contradictory assumptions about transcendence, immanence, and purity that underlie our so-called "modern" understanding of the world. Latour interrogates modernity as a worldview, even a primary framework, although he doesn't engage with Goffman and probably would not use those terms. Nevertheless, framed through the lens of Latour's analysis, modernity itself can be seen as a powerful structuring frame, one with incredible impact on how we in the cultural West and global North have come to understand what constitutes reality, authoritative knowledge and legitimate science.[177]

In *The Postmodern Adventure*, Steven Best and Douglas Kellner characterize both postmodernity and modernity as worldviews.[178] Like many theorists of the postmodern, Best and Kellner recognize both discontinuity and continuity between the contemporary moment and the past, interpreting this to mean that we are in the midst of a shift, a long pivotal moment that blends the modern with the postmodern. In this respect, their analysis bears some similarities to Latour's insights (and they cite him for his definition of technoscience), but Best and Kellner don't seem to take

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Modern (13-48) and Donna Haraway in *Modest_Witness@Second_Millenium* (23-39). See also, among others, Potter, "Making Gender/Making Science"; Shapin, *A Social History of Truth*; Shapin and Schaffer, *Leviathan and the Air-Pump*. Cf. Daston and Galison, *Objectivity*. I return to this issue later and in the following chapter.

[177] According to Andrew Pickering's interpretation, Latour's critique doesn't go this far; he suggests that "Latour's writings portray modernity as *a state of mind*" but asserts that we need not just to rethink the world but to "build some sort of counter-world in which another kind of ontological imagination can flourish" (305-306). However, I would suggest that Latour's writing can itself at times work as an act of world-building, taking the reader through a process of re-imagining that has material implications.

[178] See the introduction to *The Postmodern Adventure*, "Between the Modern and Postmodern" (especially 11).

his argument about never being modern seriously, and to a certain extent they may fall back into a narration of modernity according to the fairly standard story of the 'birth of man' and development of 'modern science', even while they critique that account. Still, their attention to the relationship between the modern, the postmodern, and science is interesting and productive, including their discussion of postmodern forms of sciences, such as certain interpretations of quantum mechanics.[179]

However, in their urgency to critique a form of technological liberal humanism that often goes by the name of posthumanism, Best and Kellner are quick to subsume what Jill Didur and others call "critical posthumanism" into "postmodern humanism" (271), almost as a side note, devoting the bulk of their discussion of posthumanism to the possibilities (and risks) of evolutionary interaction between humans and technology. It's a reasonable logistical move, but the recent growth in posthumanist thought and writing suggests that it may be more analytically useful to distinguish between postmodernism and posthumanism (as worldviews and as framings) – even where some writers whose work informs or is considered to be posthumanist reject the label themselves (such as Haraway, *When Species Meet* 9).[180] In a special issue of *Cultural Critique* Didur describes critical

[179] See especially "Postmodern Turns in Science." I return to this work in the following chapter.
[180] In *When Species Meets* Haraway rejects the term "posthuman" because "urgent work still remains to be done in reference to those who must inhabit the troubled categories of woman and human, properly pluralized, reformulated, and brought into constitutive intersection with other asymmetrical differences" (16). For a real scientific, and cognitive, accountability, she argues, we need to work at ethical relationships with those "others" that can never be brought into the protected category of human. As I

posthumanism as working from the assumption or understanding that solid boundaries between nature and culture, human and animal, etc., never existed in the first place, which is distinct from deconstructing boundaries that have been clear at some time in the past (101-102). This is in tune with Latour's assertion that we have never been modern; i.e., posthumanism is distinct from postmodernism in that it considers modernity to be a product and process of boundary-making (to offset the proliferation of boundary-blurrings) rather than a period of greater certainty about boundaries that have now begun to come apart.

Acknowledging posthumanism as a distinct critical perspective (and, I would argue, as a potential primary framework) is also an important move for engaging with how scholars in a range of fields have simultaneously turned away from modernism and humanism in their analysis, often explicitly positioning their own work as posthumanist. Andrew Pickering, for example, working in the field of science and technology studies, situates himself within the subfield of "posthumanist STS" (discussed in more detail below). Humanist STS, he argues, tends to look for and focus on human and social explanations for the phenomena it examines; in contrast, posthumanist STS focuses on "*theories of the visible*" – seeking to make sense of complexity without trying to uncover an underlying order (Pickering 292). Methodologically speaking, posthumanist STS then demands that "the appropriate unit of cultural analysis is no longer given in advance; it has to be found in each empirical instance" (293). This resistance to totalizing theories and approaches brings posthumanist STS into potential affinity with many feminist,

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hope this chapter begins to make clear, I believe this kind of work is entailed in and by a critical posthumanist approach.

postcolonialist and postmodernist studies of science and technology and, in more general terms, many recent turns in critical and cultural theory. A potential distinction lies in that for posthumanists the world always, necessarily, answers back (more to follow).

Similarly, but in a different field, Kay Anderson situates her work in cultural geography as posthumanist. In an essay addressing the evolutionary relationship between humans and nature, Anderson asserts that she isn't interested in arguing for the species-specificity of humans; rather, her working perspective contests the idea that what makes us human is our distance from nature. She brings humanism and race into dialogue to do so, discussing colonial encounters with Australian Aborigines. She makes this connection not to offer a generalizable case study but to examine a particularity – and this is another aspect of her posthumanist approach, exploring the significance of specific examples and encounters without trying to produce a totalizing explanation.[181] She presents this essay as a look at the way in which the closeness of particular humans – Aborigines – to nature disturbed European Enlightenment humanist ideas of the universal human and was used to justify mapping race onto a chain of progressive human mental evolution.

For Pickering and Anderson, among others, posthumanism is a distinct methodology and a kind of analytic logic. Posthumanism, then, is not simply a subset

[181] Again this resistance to totalizing theories isn't unique to posthumanism; it just gets taken up in particular anti-anthropocentric ways in posthumanist critique. Anderson's approach to the general and the singular resonates interestingly with Lauren Berlant's use of case studies and interest in "generalization: how the singular becomes delaminated from its location in someone's story or some locale's irreducibly local history and circulated as evidence of something shared. This is part of my method, to track the becoming general of singular things …" (12).

of postmodernism or an "after" to "humanism." Nor is it reducible to transhumanist visions of future humans fused with or uploaded to machines. Rather, posthumanism has become, in some contexts, a broader pattern of thinking, a cognitive style, perhaps a foundational conceptual framework in itself. Cary Wolfe makes this explicit in his recent book, *What is Posthumanism?*, where one of his most basic answers to this question is that posthumanism is a change "in the nature of thought itself" (xvi). It is worth quoting Wolfe here at some length, as I am in great sympathy with his reading of the concept:

> My sense of posthumanism is … analogous to Jean-François Lyotard's paradoxical rendering of the postmodern: it comes both before and after humanism: before in the sense that it names the embodiment and embeddedness of the human being in not just its biological but also its technological world, the prosthetic coevolution of the human animal with the technicity of tools and external archival mechanisms (such as language and culture) … and all of which comes before that historically specific thing called "the human" that Foucault's archaeology excavates. But it comes after in the sense that *posthumanism names a historical moment in which the decentering of the human by its imbrication in technical, medical, informatics, and economic networks is increasingly impossible to ignore, a historical development that points toward the necessity of new theoretical paradigms (but also thrusts them on us), a new mode of thought that comes after the cultural repressions and fantasies, the philosophical protocols and evasions, of humanism as a historically specific phenomenon*. (xv-xvi, emphasis added)

Posthumanism is, thus, not an academic trend[182] but a way of understanding and analyzing ourselves and the world of which we are part.

Critical Posthumanism (elaborated)

In an essay entitled "Theorizing Posthumanism," Neil Badmington emphasizes the need to think about posthumanism in theoretical terms rather than just accepting it as a given of contemporary reality or assuming that the human and humanism are dead.

[182] As I have heard a few established scholars suggest.

He turns to Derrida for instructions on the deconstruction of humanism and the 'human remains' within posthumanism, however well they try to disguise themselves. In the process he finds the seeds of posthumanism even in Descartes' humanistic dualism, suggesting that humanism and "ontological hygiene" (citing Elaine L. Graham) were 'always already' in crisis. For example, Descartes's claim that there couldn't be a machine complex enough to sustain a convincing simulation of humanity (and human reason) actually opens up the possibility that such a machine *might* exist (17-19). As he continues, Badmington sets up an analogy between Lyotard's idea of postmodernity as a rewriting (cf. Freud's 'working through') of modernity and the notion of posthumanism rewriting humanism (20-21). There is no clean break between humanism and posthumanism, Badmington correctly argues, and though humanism certainly needs a rewriting – or, a *reframing* – we have to be attentive to its remains or what we'll be stuck with is simply humanism disguised in new posthuman clothes.

Badmington's argument is an articulation of "critical posthumanism," which in Bart Simon's words, is "an interdisciplinary perspective informed by academic poststructuralism, postmodernism, feminist and postcolonial studies, and science and technology studies."[183] *Critical* posthumanism is an attempt to

> develop an alternative framework for addressing the discourse and practice of posthuman futures without resurrecting human nature or promising to be blindly faithful to seemingly postmodern ideologies of infinitely malleable life. (2-3)

[183] Cary Wolfe, among others, would add critical animal studies to this list. Many of these influential and informing perspectives are marked in the *Posthumanism* reader edited by Neil Badminton (Palgrave, 2000). The collection includes selections by Roland Barthes, Rosalind Coward, Frantz Fanon, Michel Foucault, Louis Althusser, Jean Baudrillard, Paula Rabinowitz, Judith Halberstam, Donna J. Haraway, Scott Bukatman, Bill Readings, Jean-François Lyotard, and Badminton himself.

In theoretical terms, then, critical posthumanism marks a dramatic conceptual shift: the 'human' is not just problematized, and expanded to include the plurality and diversity of humans in the world; instead, the notion of a solid and stable line separating humans from non-human 'others' is replaced by the notion that this line is plural as well as culturally and historically contingent – to an extent, situation-specific (see, for example, Cary Wolfe xxv). Posthumanism, in this sense, is not an erasure of difference, but an attunement to the multiplicity and heterogeneity of many entangled differences, differences not just in beings but in knowings as well. However, as the texts I have analyzed (and will analyze in chapter five) demonstrate, a posthumanist sense of the multiplicity and heterogeneity of being is not only a critical concern but a concern of popular culture and its texts as well.

Critical posthumanism, as taken up by scholars like Cary Wolfe, is distinct from the discourses of technoscientific futurism, of biotechnology corporations (such as Monsanto), or of the desire to *trans*cend 'human' material and corporeal limitations without letting go of our attachment to individual identity (see Simon 2). Hence some critics prefer to apply the terms *transhumanism* or *extropianism* to these latter conceptualizations and perspectives to mark their reiteration of Enlightenment humanistic values (see also Eugene Thacker 74-75). Transhumanism and extropianism are self-applied labels as well, used by, for instance, Max More ("founder of the California-based extropian movement," Simon 2), or the Toronto Transhumanist Association. For some, the desire for humans' technological transcendence becomes a central ideology, even religion, as is the case with the Terasem movement: a

"Transreligion for Technological Times."[184] In this context, a particular kind of posthumanism becomes a philosophy based on a hybrid human/technological subjectivity that is expected to be better than the humans that have come before (as with the faction promoting "Guided Human Evolution" in *Fringe*). This is, as Sherryl Vint points out, an ethically hazardous perspective, risking the positioning of some humans as "inferior or obsolete equipment" and "covert[ly] return[ing] to a simplified vision of liberal humanism" (177).[185]

In an article examining posthuman subjectivity for the *Journal of Narrative Theory* ("Becoming More (Than) Human," 2007) Myra Seaman usefully and concisely groups some of the many and various usages of the term *posthuman* into two main strands, distinguishing the theoretical from the posthuman in its more popular forms:

> Theoretical posthumanism transforms the humanist subject into *many* subjects, in part by releasing the body from the constraints placed on it not only by nature but also by humanist ideology…
>
> The popular culture posthuman, by contrast, envisions the challenges to the human as largely corporeal ones … what is called for is not a reconceptualization of what "counts" as human, but rather, an entirely new and supposedly better human form. (Seaman 248)

This "popular" posthuman is often considered to be synonymous with "transhumanism" for its (above-mentioned) emphasis on making humans "better" (see Simon 2). However, popular culture representations and discourses are more often anxious about posthuman possibilities, expressing concerns about the ways in which technology might change human identity and embodiment – held out sometimes as a promise, in other

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[184] See the Toronto Transhumanist Association, "For the ethical use of technology to extend human capabilities" (http://toronto.transhumanism.com/, accessed January 12, 2012), or, the Terasem web page (http://www.terasemfaith.org/index.html, accessed January 12, 2012).

[185] Vint offers a particularly well-developed critique of the liberal humanist in 'transhumanist' fantasies in relation to science fiction in *Bodies of Tomorrow*, although she is not the only cultural critic to take up this issue.

cases as a threat – and a persistent faith that our sensory experiences and emotional attachments (our affects) will enable our fundamental selves to remain intact (Seaman 248-249). 'We are human because we can feel, we can love,' one might say, a philosophy that seems to underlie the representations of posthuman becoming experienced by the lead characters in Ghostwalkers and *Fringe*. In contrast, theoretical posthumanism is not interested in identifying essential traits that allow us to remain human but in interrogating the processes and structures by which we are constituted to understand ourselves and others as fully human, or not.

Seaman's discussion of posthumanism (and of connections between popular posthumanisms and medieval conceptions of identity) places an emphasis on categorical (and ontological) definitions, highlighted in part by her citation of Elaine Graham, who analyzes the posthuman, or "post/human"[186] as a counter to what she calls "ontological hygiene" (Graham 11). Yet, as Graham writes (and Seaman notes as well, with her reference to "humanist ideology"), the human isn't an "essential autonomous being" but a "creation" that is "brought into existence" through epistemology (Graham 41). Invocations of the posthuman are not, then, just about ontology but about the imbrication of epistemology and ontology, the interrelations of discourse and materiality, the interactive effects (and affects) of experience and knowledge.[187] But the posthuman isn't *simply* another being (or even process of becoming) that comes into existence through epistemology. The posthuman is a

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[186] Again, Graham's use of "post/human" rather than "posthuman" is meant to interrogate the inevitability of narratives of posthuman becoming.
[187] Knowings and categorizations are intertwined, as Judith Butler makes clear in *Frames of War*, where her opening essay describes framing as both an ontological and an epistemological problem: ontological because framing lives poses the question, as she asks, "*What is a life?*" but epistemological because we can only conceive of life through our epistemological frames (1).

figuration that comes into being amidst a complex web of contemporary conditions.

Posthumanism, then, demands a different kind of ontology *and* epistemology, or, epistemologies. The infamous posthuman subject of Donna Haraway's "Cyborg Manifesto," for instance, is a theoretical hybrid, without origins or innocence or clear separation from animal and machine (*Simians*). But, she is also a *knowing* subject. As Vint brings out in her discussion of posthuman ethics (*Bodies of Tomorrow*), the posthuman entails not just a theory of subjectivity but also – in Haraway's terminology – *situated knowledges*. A now generally accepted wisdom among feminists is the idea that knowledge is localized, embodied, partial, and contestable – and that marginalized groups are particularly well positioned to recognize the unequal power relations that current knowledge systems and structures support.[188] Haraway articulated this insight (in the 1980s) in terms of *situated knowledges*: explicitly partial, embodied (even in technological prosthetics), contested and contestable, such knowledges recognize that our experience of the world is mediated but that mediation is not the whole story – without throwing the idea of knowing a 'real world' completely out the window (*Simians* 185-190). Knowledge becomes contested and contestable, but on material rather than arbitrary or absolutely relative grounds (*Simians*). Emerging, in part, from Haraway's speculative science-fictional insights, posthumanism demands, then, revised (from modern humanist) ways of conceptualizing knowledge, and more nuanced ways of understanding the relationship between a heterogeneous world of differences, but

[188] See, for instance, the large body of scholarship that has developed around feminist standpoint theory since the 1980s. It is important to acknowledge the limits of embracing subjugated standpoints, the impossibility of reproducing the conditions that have constituted another's worldview and the effects of speaking on another's behalf; but it is also necessary to prevent these challenges from enforcing a passive silence. As Susan Fast reminded me, Linda Alcoff's "The Problem of Speaking for Others" takes up some of these challenges (http://www.alcoff.com/content/speaothers.html, accessed August 15, 2012).

also frameshifts in our understandings of reality – of temporality and the asymmetrical agencies of everything we come into contact with, the liveliness of the world.

Science and Technology Studies: Epistemologies, Ontologies, and (Anti-) Anthropocentrism[189]

The rapid scientific and technological innovations of the past few centuries, along with the dramatic increase in industrial and industrialized production that such innovations enabled, have informed our understandings of the relationship between 'humans' and 'nature,' 'society' and 'technology,' 'science' and 'politics' – in specialist technoscientific fields, in academia and in popular culture, speculative fiction included. These understandings are often contradictory, ambivalent and diverse. However, within Western/Northern societies, under the influence of the predominant "modern" worldview and its legitimating authority, we have historically, and anthropocentrically, tended to conceptualize society, technology, and nature as distinctly separate realms – with science a mediating force between them – and often continue to do so, conceptually and discursively if not always consciously and deliberately. (The archetypal scientist character mediating between technoscience and society in a proliferation of Hollywood films is a strong indicator of how prevalent this conception continues to be.)

Seeing nature and technoscience as domains separate from human culture, society, and identity,[190] "modern" understandings of such categories also frame them in

[189] Ontological categories, ways of understanding them, and of deconstructing them are a vast and contentious area of discussion, as this chapter and this thesis attest. My work in this area is heavily informed by Donna Haraway (particularly *Modest_Witness* and *When Species Meet*) and Bruno Latour (particularly *We Have Never Been Modern* and *Politics of Nature*). My use of the phrase "co-constitutive and entangled interrelations," in particular, draws on words that appear frequently in Haraway's writing. My suspicion of homogenizing categories has been influenced by Jacques Derrida's *The Animal that Therefore I Am* (2008).

subordinate relation to the rational Enlightenment human (white European man by default). Based on this framing, we still tend to approach questions and concerns about technology, science and/versus nature (and our own relationships to and with these entities), in terms of effects or use – asking about the *impact* of science and technology on society, or about the *effects* of humans' applications of research and innovations on ourselves and on the natural world.[191] At the same time, this perspective has also served to underscore and legitimate instrumental and operational 'uses' of the natural world as well as a wide variety of 'other' entities, seeing the 'natural' as raw material there for the taking, to study, reveal, understand, shape, dominate, mine, exploit… And, by extension, our technologies can seem mere neutral tools, artefacts of our supposed evolutionary superiority, allowing us to adapt the world to us. This is the anthropocentric liberal humanist philosophy frequently espoused by the technoscientific institutions (especially those with military or corporate funding) represented in popular science fiction – such as Donovans in Ghostwalkers, Massive Dynamic in *Fringe*, or the company run by the elf Trent Kalamak in the Hollows.

Scholars and activists of the past several decades – under the influence of deconstructionism, postmodernism, and the demands of what were, in the latter half of the twentieth century, 'new' social movements – have found, and are still finding,

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[190] We have long worked very hard to see humans as separate from both the natural world and the tools we use to engage with it. We have also long been dualistically preoccupied with divisions between matter and mind or matter and spirit, and since the hegemony of evolutionary theories we have been involved in numerous and continuing struggles to sort out the "nature" and the "culture" within us, so that 'human' is ambivalently and contradictorily invoked in relation to "nature," "culture" and "society" in various situations. Here, I gesture toward the parts of collective, 'social' and 'cultural' human existence that generally have been named to distinguish us from nature, animals and machines (language, consciousness, civilization, politics, etc…).

[191] See Pierre Lévy (3-5). In *Cyberculture* (2001), Lévy devotes a short introductory chapter to the metaphor of "impact" in technological commentaries.

various (and not always entirely compatible) ways to problematize the humanist, masculinist, and Eurocentric biases underlying epistemology and ontological formulations such as the nature/technoscience/society triad. These critical interventions follow and build upon earlier conceptual destabilizations of anthropocentrism and human rationality. The nineteenth century was particularly rife with such unsettling ideas – evolutionary theories of our animal origins, for instance, or psychological theories about the determinant power of our unconscious desires, compounding earlier revelations such as the discovery that the Earth rotates around the sun (aka the Copernican Revolution). The modern human has thus come up against several "'ego-smashing' historical moments" that have destabilized the "discontinuity between human and nature" (Bukatman 8-9).[192]

The technological saturation of the contemporary moment may be a further lever for unsettling the lines we draw between humans and nonhumans, particularly technologies (see Bukatman 8-9). Certainly some commentators, such as Ray Kurzweil or Verner Vinge, envision the man/machine distinction disappearing, with predictions of the coming Singularity or fusion of humans with artificial intelligence technologies.[193] And there is no shortage of science fiction narratives (Vinge's included) extrapolating current technoscientific development to the point where bodies are infinitely technoscientifically malleable or, thanks to computer technology and artificial intelligence, utterly obsolete. But even beyond (and before) such tales science fiction

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[192] Scott Bukatman's discussion of discontinuities in *Terminal Identity* explains and engages with claims made by Freud about the historical and social significance of psychoanalysis, and with Bruce Mazlish's ("The Fourth Discontinuity," in *Technology and Culture*) and Jerome Bruner's ("Freud and the Image of Man," in *Partisan Review* 23.3) amendments of Freud's observations (see 333n24).
[193] See, for example, Kurzweil, *The Singularity is Near* (2005), or Vinge "The Coming Technological Singularity: How to Survive in the Post-Human Era" (1993).

has frequently reminded us that malleability isn't infinite or without consequence (as the texts discussed in the following chapter emphasize), and that humans are small, even comparatively inconsequential, in cosmic terms, revealing that anthropocentrism is just one particular (and particularly human) framing of the world. Following different tracks then, rather than envisioning humans becoming (or recognizing their status as) a new kind of machine, or reversing the hierarchy to make humans small and nature supreme, some contemporary critical thinkers (and authors, such as Justina Robson, as discussed in chapter five) see humans, nature, sciences and technologies as mutually implicated categories.

In practical terms, differentiating between categories such as human and nonhuman, technoscience and society, can be a necessity for going about our day-to-day activities and communications. But conceptually, and politically as well, these classifications are too static, too vague, and hinge too much on ideas of human distinctness and exceptionalism. Terms like "nature" and "technology" (opposed to "human" and "society"), however useful in general practice, cloud over the contingencies and multiplicities of the categories to which they refer but also the differences between individual entities and their social or categorical identities.[194] The notion of "nature" and "not-nature" (and so on) as distinct but homogeneous categories obscures the co-constitutive and entangled interrelations within and beyond the

[194] To offer an illustration from the texts discussed in the previous chapter, the plants in Rachel's churchyard garden ("nature") are distinct from the woman who cooks spells with them and from the copper pots ("technology") in which she mixes them, but the plants are also distinct from each other and when mixed are distinct from what they were while growing in the yard. In speculative fiction such differentiation can become foregrounded through processes of defamiliarization – characters such as Rachel and Ivy appear to share the category of woman, but their backgrounds and experiences are vastly different as are their cultural and biological identities: Ivy is a vampire and Rachel is a witch. Their being-in-the-world is also shaped by their interrelations with each other, with the tools and objects they interact with, and so on…

boundaries that we commonly see and draw, interrelations that make us what 'we' are, whatever that 'us' may be, making our worlds and how we know them. How we apprehend or recognize these interrelations, or not, thus forms a substantial part of our framing narratives, informing the stories we tell and the conditions we imagine to exist or be possible, with inevitable and significant practical and ethical implications.[195] Speculative fiction, with its potential for defamiliarizing the ontologies and epistemologies we take for granted, is a crucial site where the categorical framings of technoscientific modernity may come into apprehensible view.

Toward Posthumanist Critiques of Science

A growing number of scholars have come to criticize instrumental and operational appropriations of nature and of bodies excluded from the category of "fully human" (women, people of colour, children, animals), as well as contesting assumptions about the supposed neutrality and objective detachment of science and technology. Critiques of Western/Northern science and technological discourses increased in number and sophistication dramatically in the latter half of the twentieth century, informed and propelled largely by "progressive" developments in academic thought, by

[195] Variously nuanced critiques of technoscience are numerous within 'progressive' and Leftist academic circles. However, engagements with the technosocial dynamics of the present, near-past and near-future are certainly not all, or even predominantly, progressive. Postmodern and posthuman destabilizations are inevitably ambivalent – just as the modern worldviews that preceded them and persist around and within them – and thus can also feed more exploitative relations or uncritical optimism about technological change and technoscientific interventions. Jill Didur's "Re-Embodying Technoscientific Fantasies" is a powerful discussion of how the discourses of Big Technoscience can appropriate boundary blurrings for exploitative (and ultimately humanist) ends. See also Haraway, in *Modest_Witness*, where she remarks on how in the New World Order of technoscience, nature has become "no nature" in order to legitimize the interventions of technoscience such as genetic engineering (see Haraway 102-3). Ambivalent conditions tend to provoke ambivalent responses. Postmodernism and posthumanism remain contentious ideas and approaches.

social movements fighting for a broader definition of humanity and a wider distribution of social and political rights, and by the more general suspicion toward metanarratives and moves toward relativism that tend to be associated with postmodernism. Emerging as a coherent, if diverse and wide ranging, field in the late twentieth century, science and technology studies has come to encompass a wide range of analyses and projects that problematize liberal humanist visions of the neutrality and objectivity of science and technology.[196] Recent critical work on science and technology derives from philosophical, historical and social studies of science, feminist critiques of patriarchal medicine and science, and ecofeminist resistance to the rationalist exploitation of nature as well as poststructuralist interrogations of scientific discourse and knowledge, among other influences, although these strains of thought often exist in congress rather than as fully distinct conversations.[197]

Destabilizations of traditional approaches to narrating the history and philosophy of science have emerged, to some extent, from within science itself. Thomas Kuhn's *The Structure of Scientific Revolutions* (1962) has been extremely influential both within and outside of the field of philosophy of science for its discussion of how shifts in scientific "paradigms" take place as social processes. Though controversial, Kuhn's

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[196] Patrick Sharp usefully divides the primary concerns of contemporary science and technology studies into investigations of: "problems with objectivity," science as "social process," science as a cultural enterprise, the "narrative" [and metaphorical] nature of scientific explanation and understanding, complicating the boundaries between human and nonhuman, and the relationships between science and other forms of cultural production such as literature (broadly) and science fiction. Cf. R. Doug Davis and Lisa Yaszek's organization of STS into three categories: "the sociological study of scientific knowledge," "technoscience studies," and "cultural studies of science and technology or studies of technoculture" (186).

[197] In "Science and Technology Studies: From Controversies to Posthumanist Social Theory," Sophia Roosth and Susan Silbey offer a coherent and informative outline of the development of the field and the various voices and positions at work in that development.

account of scientific paradigms has had a significant impact on how scholars understand the social development and institutionalization of scientific theories, of how scientific knowledge, as a collective discipline (or collection of disciplines), actually works. Following Kuhn, many more recent interrogations of science have been produced by scholars trained in institutionalized Western/Northern science.[198] But scientific knowledge and practices have also come under critique from historians and ecofeminists, as well as indigenous scholars and activists, among others – a large, complex and diverse body of work that has enabled and informed the emergence of a 'posthumanist' approach to critical studies of science and technology.

Among postmodern and poststructuralist philosophers, Michel Foucault and Jean-François Lyotard have been particularly influential on the past several decades of technoscientific criticism (particularly in critical and cultural theory) for their insights on the relations between knowledge, discourse and power. Alongside, generally, deconstructionism and postmodern challenges to progress, to grand theories, and to "empiricist notions of representation," Maureen McNeil and Sarah Franklin specifically cite the work of Foucault for enabling contemporary cultural studies of science (133). *The Order of Things*, in particular, has exerted a formative influence on the development of epistemological challenges to authoritative knowledges, including science, and is

[198] Although many critics engaged in science and technologies studies work are themselves trained scientists, their scientific colleagues have not universally or even predominantly welcomed analysis of technoscience from the 'outside,' so to speak (meaning critical social and/or cultural perspectives). During the Science Wars of the 1990s, for example, scientists objecting to this dimension of the "cultural turn" in critical and social theory construed theories of social construction and postmodernity as attacks on science – attempts to undermine the empirical reliability of scientific research or even the existence of reality itself (most famously, perhaps, Jean Baudrillard's claims for the "hyperreality" of the first Gulf War). And indeed, this diverse body of scholarship did include reductive analyses and postmodern extremes.

frequently acknowledged as such.[199] Lyotard's analysis of 'the postmodern condition' and its implications for the (im)possibility of authoritative narratives of truth has informed critiques of technoscience and technoscientific epistemologies as well (also analysis of the relationship between science and science fiction, as is the case with Robin Roberts's *A New Species: Gender and Science in Science Fiction*).

Anticipating and participating in postmodern and poststructuralist interrogations of (post) Enlightenment narratives, particularly those of "bipolar" difference, feminist theorists and activists have frequently been at the forefront of challenges to scientific knowledge as well (McNeil and Franklin 129-134). Bringing science and technology back into the political and social was a key project of early feminist criticism, producing work that contested, for example, the biological "truth" of gender difference, and sought to expose and resist the patriarchal biases underlying the alleged objectivity of scientific explanations of the world. Earlier scholars may have studied social and political contexts of scientific developments; feminist epistemological critiques revealed how those contexts shaped what, according to dominant ideas about gender hierarchies and gender difference, could be known as science and technology. This interest in science derives, in part, from the institutionalization of scientific and

[199] For instance, in an interview with the Canadian Broadcasting Corporation (CBC) for their "How to Think About Science" series, science studies scholar Lorraine Daston recalls Foucault for introducing the idea that different kinds of objects – like sexuality – have histories, which upsets the inevitability of the present. Daston claims that the multiplicity this opened up created a hopefulness for a more historically hybrid future (although she now thinks this might have been overly optimistic, that it fails to address the need for these hybrid elements to cohere). Veronica Hollinger also notes the influence of Foucault's work on biopolitics in contemporary theoretical analyses of technology, science and power. Feminist engagements with science and technology studies are not homogeneous and are certainly not universally enamored with or indebted to Foucault, however. For example, in an issue of *Cultural Critique* dedicated to posthumanism, Annette Burfoot expresses her concern about young feminist scholars taking up Foucault, reading feminism in his work without realizing that feminism needs to be read *into* his work because it is not really there.

medical knowledge within the patriarchal knowledge-power structures that feminists were and are committed to critiquing (McNeil and Franklin 129-130).[200] But this work has also facilitated social constructionist and sociocultural approaches to science and technology more broadly. Engaging in analyses of science's patriarchal bias and working toward developing explicitly situated and less exploitative concepts of scientific objectivity, feminist science studies also prefigured and influenced, for instance, cultural studies' eventual engagement with issues of science and technology as culture.[201] Additionally, feminist critiques of science and technology have played a significant role in the development of the subfield of posthumanist science and technology studies, which is itself deeply entangled in a larger posthumanist theoretical project.[202]

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[200] Were I to take this analysis back to the late nineteenth century I might find the roots of a postmodern critique of science in first wave feminists', spiritualists' and others' opposition to the early institutionalization of medicine and science. Similarly, Barbara Herrnstein Smith finds what we tend to think of as postmodern relativism emerging well before the historical postmodern moment. Activist movements and critiques of scientific authority are long intertwined, and not only within feminist circles. Sophia Roosth and Susan Silbey note the connections between suspicions of science related to the "anti-Vietnam War movement in the United States in the 1960s and 1970s, and the growing anti-nuclear and environmental movements in the United Kingdom and Europe in the 1980s" (457).

[201] According to McNeil and Franklin, cultural studies held back from questioning science and technology because of the discipline's origins in English literary studies and its adoption of the work of Louis Althusser, which aims for "scientificity" in cultural analysis and is thus rather uncritical toward the ideologies of science (131-132). Early cultural studies scholars also failed to see science and technology as part of subordinated social groups' everyday experience (132).

[202] Much like cultural studies, posthumanist scholarship has been characterized as interdisciplinary, multidisciplinary and antidisciplinary (see Pickering 294, who prefers the latter characterization); this is because the leakiness and multiplicity of boundaries and critiques of purist forms of categorization are among posthumanism's primary concerns.

Posthumanist STS

If I have emphasized feminist criticism to acknowledge its influence on the development of contemporary science and technology studies, Roosth and Silbey outline a somewhat broader web of influence, particularly emphasizing scholarship around the notion of "boundary work" in science (see Gieryn, *Cultural Boundaries of Science: Credibility on the Line*, 1999).[203] Where this work begins to shift into the subfield of *posthumanist* science studies is (for Roosth and Silbey) with actor network theory (ANT) as developed by Bruno Latour and Michel Callon – an approach that continues to underlie Latour's analyses of science and politics. In ANT terms, "scientific facts are things in motion," the "result" – rather than the "cause" – of "the settlement of controversy," produced (along with "machines") by active agents ("actors") in collaboration with (and in representation of) non-speaking "actants" (464). Hence, as an integration of epistemological and ontological analysis, ANT is concerned, in part, with how we understand the distribution of agency, and redistributes agency along different lines. From this perspective, of significant influence in the subsequent development of science studies, "things" exert a kind of agency, and "operat[e] in concert with humans within extended heterogeneous networks of objects and persons" (464; cf. Pickering 294). These networks, or "collectives," are themselves politicized entities (Latour, *We*

[203] They provide a long list of diverse contributions in this vein, with scholars examining science at different historical periods, activities (especially women's activities) excluded from definitions of science, and what might be termed "postcolonial" and non-Western sciences as well as the relationships between Western science and colonialism (459-460, 463-464). "Mature" science studies, the authors suggest, demonstrates an ongoing concern with "the discourses and practices of institutional legitimacy and exclusion," and hence has "attended to the ways in which science is internally defined as a privileged site of knowledge production, focusing … attention on the indistinguishability of science from non-science" (non-science meaning, for example, 'culture') (459).

Have Never Been Modern; *Politics of Nature*).[204] This "turn towards the agency of things" in (posthumanist) science studies has, to some extent, spread even to fields beyond technology and science (Roosth and Silbey 465), as I suggested earlier, so that it is possible to find posthumanist premises informing analyses in economics, globality, environmental studies, and examinations of our relationships with animals (Pickering 300-303).[205]

The model of co-evolution and collective knowledge formation that emerges from a posthumanist approach to science and technology is more complex than arguing that society and culture shape scientific knowledge, technological development and how these terms are defined. Latour, for example, rejects talking about 'science' and 'technology' and their 'social contexts,' in part to recognize the reciprocal relationship between people and things, subjects and quasi-subjects / quasi-objects, the agency of the material. The challenge, then, is to trace the role of social and cultural forces in human interrelations with the natural, the mechanical and the scientific, while acknowledging the active agencies exerted and exhibited by ideas but also by nonhuman entities and materialities, whether so-called 'natural' or 'technological'. Concepts like 'technology,' 'society,' 'nature' and 'science' are thus redefined, spheres envisioned as co-constituting and inextricably interrelated, taking the asymmetrical

[204] Other terms for these heterogeneous webs and the hybrid entities within them include (but are not limited to): " 'assemblage' (Callon), 'network' (Latour), 'cyborg' (Haraway), 'parliament of things' (Latour), 'capillary' (Foucault), 'the body multiple' (Mol 2002), or 'rhizome' (Deleuze)" (Roosth and Silbey 459).

[205] Where Pickering and others see symmetry in this redistribution of agency (he, for example, refers to the decentring of the human in posthumanist STS as a move toward symmetry), Haraway sees differential and asymmetrical relations, and an imperative need to try to get these relationships right. This is apparent in her earlier science studies work, such as the foundational *Primate Visions: Gender, Race, and Nature in the World of Modern Science* (1989), but has become even more prominent as she has turned her focus to more everyday human-animal relations, particularly between women and dogs.

agencies of humans and nonhumans into account.[206] Though associated with postmodern critiques of fixity, metanarratives and "Truth," this particular move away from anthropocentrism is not strictly post*modern*, but rather post*human*.[207]

A posthumanist perspective produces a distinct methodology (as mentioned earlier in this chapter); it has also entailed a reframing of science: science can be understood not as an uncovering of the secrets of an inert and discrete nature but an interactive learning process that involves the engagements of multiple entities – scientists and non-scientists, tools of observation and measurement, discursive frameworks, acting 'objects' of study, and so on. For Roosth and Silbey, posthumanist science studies can, then, be summed up by way of three main ideas, variously combined in their application:

> the hybrid assemblage of social and material elements in our world; the agency (Latour 2005) or 'performativity and power' (Pickering 2005) of the material world, and finally, the resistances enacted by social and material phenomena in their interplay with each other. (465)

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[206] See, for example, Haraway's discussion of the National Geographic Crittercam in *When Species Meet* (262-263), where she engages with the differential, asymmetrical and entangled agencies of the animals, technologies, and humans involved in the project of studying animals by attaching small video cameras to their bodies.

[207] Actor network theory and, by extension, posthumanist science studies more generally, has implications for understandings of understandings of temporality and periodization, as indicated earlier. Following Latour, Pickering asserts that "the basic ontology of the actor-network approach is *nonmodern*" (294), and this critique of modernity is among the essential criteria distinguishing critical posthumanisms from liberal humanisms in posthumanist guise. As Haraway writes in *When Species Meet*, "Modernist versions of humanism and posthumanism alike have taproots in a series of what Bruno Latour calls the Great Divides between what counts as nature and as society, as nonhuman and as human" (9). By critiquing technoscientific modernism as well as anthropocentrism, posthumanist STS proposes a conceptualization of a space-time that contests Western/Northern technoscientific exceptionalism at the same time as it resists notions of ontological purity in understanding the world in which science exists, and which it describes. Nonmodernity is inhabited by entities that don't fit comfortably on either side of any "Great Divide."

Somewhat more elaborated, Pickering's summary of posthumanist STS encompasses eight, rather than three, key components, which (similarly) include the decentring of the human, the complication of boundaries – between science, the material, the social and the conceptual, culture and practice (cf. Roosth and Silbey on "boundary work"); and attention to the intertwinings and "assemblages" of multiplicity – relations that can be partially and temporarily isolated in posthumanist analysis (292-293). The world thus imagined is not static but always in process – a field of "cultural becoming and temporal emergence" rather than traditional causes and effects (Pickering 293). Such framing has, then, implications for academic analysis and notions of scientific objectivity but also, more broadly, for our conceptions of reality; again here, ontologies and epistemologies intertwine.

Posthumanist Reality

Revising the concept of scientific objectivity and finding new ways to talk about scientific reality has long been a concern of feminist critics, particularly in the field of science studies. How to contest the inequitable allotment of power in the field of science and restrictive understandings of science, without undermining the legitimate validities of much scientific knowledge and practice, remains an ongoing challenge.[208] Among recent interventions in this debate is a sophisticated and complex engagement with questions of objectivity, realism, materialism, and power by way of physics – Karen Barad's *Meeting the Universe Halfway: Quantum Physics*

[208] Donna Haraway's concept of "situated knowledges" was one of several responses to calls for a "feminist version of objectivity" or "feminist empiricism" (from scholars like Sandra Harding and Evelyn Keller).

and the Entanglement of Matter and Meaning.[209] Here Barad develops her posthumanist concept of "agential realism"; what she proposes by way of this "epistemological-ontological framework" is a reframing of reality that emphasizes the "intra-action" of entities in and with the world.

Agential realism is a feminist posthumanist framing but also a critical intervention that might be included among the work of feminist new materialists.[210] New materialism suggests a different way of understanding the relationships between sentient beings (human or no) and nonhuman forces and elements of the universe that are not as passive as Western/Northern technoscientific rationality (as it informs ontology as well as epistemology) has traditionally imagined them to be. Overlapping and intersecting, significantly, with other strands of feminist and postcolonialist criticism,[211] new materialism may "assert the rationality of modernity's others," "revalue the passions of the body or phenomenological experience," "challenge the very notion that matter is passive and unthinking," and "question the distinction between self and world" (Frost 72). New materialism might be considered a kind of posthumanist critique.

Barad's work is distinct in its focus on physics rather than biology. Her agential realist framework is based on her engagement with Niels Bohr's "philosophy-physics"

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[209] Barad's insights are strongly informed by Haraway's (among others) but also have fed back into Haraway's more recent work; in *When Species Meet* Haraway takes up a revised version of situated knowledges, informed, as she acknowledges, by Barad (17).
[210] New materialism is a relatively new epistemological-ontological field that expresses an interest in science, often biology, while elaborating and responding to the critical demands of historical materialism (see Frost).
[211] See, for example, Julie Cruikshank's *Do Glaciers Listen?: Local Knowledge, Colonial Encounters, and Social Imagination*, which positions glaciers as active agents in the production of knowledge.

and his interpretation of quantum mechanics as a physics of complementarity – Barad sees progressive possibilities in Bohr's theories, stemming from his belief "that we are a part of the nature that we seek to understand" (*Meeting the Universe Halfway*, 247). Doing away with the need for, even the possibility of, an independent observer, Barad draws upon Bohr's work to assert that both the "measuring agency" and "measured object" are "*within* a particular phenomenon, that is 'parts' of a particular entangled state" (*Meeting the Universe* 351). From this perspective, humans are not external or central to the world and other "physical systems" but, rather, emerge 'intra-actively' "as specific configurations of the differential becoming of the world" (352). This is a posthumanist framing opening onto a posthumanist view of reality. As Sherryl Vint has argued, it's also a framing significant for analyses of science fiction ("Entangled Posthumanism" 317). I will return to Barad's posthumanist perspective and its relation to contemporary speculative fiction in chapter five.

Posthumanism and/in Science Fiction

In the midst of an overview of posthumanist STS, Andrew Pickering suggests that posthumanism has a role to play not just in analyses of "classical sciences and productive technologies" but also in studies of "arts and entertainment," which he refers to as "lighter matters" (300). Pickering's interest here is in the technologies by which the arts are produced, such as the necessity of the development of the electric guitar for the production of modern rock (300).[212] Similar analysis might include literary works as

[212] For example: "one might say that the emergent powers or agency of a technological assemblage – the electric guitar, electronic amplification, massive speakers, a specific musical technique – co-evolved with the wider cultural formation of the 1960s itself. … And here we can return to the posthumanist project of cultural mapping and assemblage … The sound of rock music more or less demands posthumanist analysis, as a constitutively joint product of a human musician (playing the notes, listening to and

well, and Pickering points to N. Katherine Hayles *How We Became Posthuman* for its examination of the "resonances between the three generations of technical development in cybernetics … and … diverse literary works" (301) – a study in generic affinities of a sort, perhaps. In terms of the posthumanist methodology Pickering advocates, instruments, artists and works (of various kinds – including speculative fiction novels and television series) are not themselves predetermined units of analysis but locatable points within technosocial (and intertextual, I would add) webs of cultural-technoscientific production. For Pickering, such artistic assemblages are, then, part of a larger cultural assemblage that also includes science and technology (301), and he sees posthumanism as the kind of "ontological imagination" we *need* in order to move beyond the failures of modernity, including the refusal to think about these hybridities and interconnections (305-306).

Less surprisingly, as he comes from a humanities background, Cary Wolfe's philosophical engagements with posthumanism include readings of artistic and cultural production as well.[213] In *What Is Posthumanism?* he devotes several chapters to works of art, film, architecture, poetry and so on, "engaging in detailed readings and interpretations of a range of cultural and artistic practices that exemplify posthumanist sensibility or problematics as they emerge and are worked through in particular media and art forms" (xxx). Wolfe's chosen texts (such as the film *Dancer in the Dark*, an artistic project called *Dead Meat*, and so on) come from diverse creative locations, but many other scholars working with the idea of the posthuman, particularly as a figure of

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exploiting unpredictable feedback effects) and a nonhuman system (guitars, amplifiers, speakers, synthesizers)." (300-301).

[213] Wolfe is a professor of English; Pickering's degrees and background are in science.

postmodern technoscientific subjectivity, identify *science fiction* as a key site of posthuman imaginings. Posthumanism and sf are generically related.

For scholars such as Veronica Hollinger and Elaine Graham, this generic affinity comes down to a concern with the ontological category of the "human": what can be classified as human, or not, what humans might become, and whether such becomings might transform us into something that can no longer be recognized as human. Hollinger locates the posthuman "[a]t the intersections of sf, critical studies of science and technology, and cultural theory, [where] there is a complex and fascinating ongoing debate about the nature of human nature in an increasingly pervasive technoculture" (267). Graham similarly positions the posthuman at a point of cultural, scientific and critical intersection. She counts science fiction – within the broader category of "fabulation" – among historical forms of (potential) social criticism from Foucault's "archaeological/genealogical method," to the study of monsters, political satire, utopian literature, alternative histories and science fiction, all ways of defamiliarizing "past, present and future" (55-59). For Graham, the study of monsters and the monstrous figures in science fiction are key sites where our conceptions of normative humanity are both reaffirmed and destabilized, where we can see what forms of humanity may lie within, outside and beyond, and how the intervening lines are (and/or should be) subject to change – the "post/human".[214]

Such intersections between critiques of humanism, genre theory, critiques of modernity, and critiques of science demand a nuanced understanding of posthumanism. Like Haraway, Graham and Hollinger are both interested in the *stories* we tell about the

[214] "By invoking the paradigm shift of estrangement, the suspension of reality, or the creation of incongruous speculations, science fiction as 'fabulation' is designed to break the hold of the *status quo*" (Graham 59).

posthuman in and outside of fiction. In their analyses, however, the posthuman remains a figure, an ontological category, a metaphor of postmodern technoscientific subjectivity. A key insight of Hayles's and Haraway's pioneering works in the field of posthumanism (and, similarly, of recent developments in genre theory) is that cultural production, discursive imaginings, do not simply represent ideas; they help shape them at the same time as they contribute to the shapings we make of ourselves.[215] Working from this idea, it may be possible to approach posthumanism not only as an ontological metaphor and, as I discussed earlier, a condition, but also as an important world-making framing, bringing together the tools of its influences and the powerful feminist and postcolonial and technoscientific (and queer, and so on)[216] critiques on which it builds. Posthumanism, as a disciplinary framework, aims to challenge the often impenetrable opposition of institutional "Science" and the "Humanities"[217]; in its emphasis on multiplicity, posthumanist critical analysis and interpretation refuses to respect disciplinary and categorical barriers, acknowledging that arts and sciences are both ways of knowing and being that cannot be so easily distinguished. It moves beyond homogeneous monolithic categories, seeking only partial, contingent and temporary understanding. It seeks to deconstruct the modernity and humanity of the "modern human." And it makes possible, at its best, a means of engaging with the materiality and multiplicity of differences and realities in the world(s). Critical posthumanism is a speculative enterprise. Posthumanism, as a reframing of contemporary reality, might be

[215] Graham and Hollinger are not unaware of this insight. Graham, for example, follows William Paden in arguing that myth and narrative are integral to how "a culture constitutes reality itself" (25-26).
[216] Although I haven't discussed it here, Judith Halberstam and Ira Livingstone have also taken up the posthuman – in their case posthuman bodies – through the lens of queer theory, seeing posthuman bodies as complex identity figurations similar to queerness.
[217] Hence, University of Minnesota Press's Posthumanities series of books edited by Cary Wolfe.

better equipped for negotiating the complexity of the worlds in which we currently live, worlds that are somewhat fantastical, science-fictional. And posthumanist apprehension of the constraints on the possibilities of knowing, being and becoming that we perpetually confront can be found not just in critical theory but also in our speculative fictions, as the following chapter will address in more detail.

The narratives and popular media texts that I analyze in this thesis, in their apprehension of posthumanist potentials, share a kind of world-framing and science-fictional generic affinity with critical posthumanism. In *Fringe* and Ghostwalkers, the modern human (as we know it) is apprehended to be not the centre of the universe (the culmination of evolution or top of the Great Chain of Being) but a historically contingent and possibly temporary brief state of being; the framings of reality these texts offer also make apprehensible the necessity of getting our technosciences (ethically, emotionally, multiculturally) right. By way of texts like the Hollows and *True Blood*, modernity and humanity might be apprehended as exclusionary concepts that need to be pluralized (we need modernities and humanities that encompass what we have tried to exclude). And the stories in *Sanctuary* and the Quantum Gravity series variously apprehend that normativity is provisional, reality is indeterminately complex, and our ethical paradigms need to encompass the intra-action of the world. These apprehensions resonate with the key aspects of the posthumanist condition – the instability of anthropocentrism, the failure of modernity, the limits of Western/Northern science – but also with the insights of posthumanist criticism. But they are imaginings, tracing out some of the hybridities, some of the different kinds of science and modernity, some of the different kinds of human and nonhuman that exist in experience and in the popular imagination. I see this contemporary condition registering, obliquely but illuminatingly,

in the speculative imaginative realities of science-fictional and fantastical science fiction. And I am attempting to use a posthumanist approach in order to grasp the shifting of epistemological-ontological frames that might emerge in the circulation of these iterations.

CHAPTER 5: Abnormal Entanglements, Posthuman Realities

The Posthuman Supernatural

The critical and activist interventions of recent decades have worked to unsettle traditional humanist epistemology, exposing and challenging its exclusions, erasures and inequalities. Similarly, and relatedly, the human subject imagined and idealized by Western modernity (as white, male, heterosexual, able-bodied, rational, autonomous, unitary, fixed… and so on) can no longer unproblematically lay claim to his former universal and unmarked status. The deconstruction of this liberal human subject – the end of the 'modern human,' as we might term it[218] – is not simply a postmodern but is, rather, a post*humanist* condition, as I argued in the previous chapter. Thinking through and responding to this condition requires a frameshift, an emergent conceptual paradigm for thinking through differences, interrelationships, and our ways of understanding them. Posthumanism is thus both a condition and a demand, and informs our cultural imagination as such.

In popular culture, and in analyses of popular cultural production, posthumanism is associated most often with speculative figures that can be easily recognized as belonging to science fiction: cyborgs, artificial intelligence, clones, humans who have been genetically engineered, and so on. Human characters who have evolved new psychic talents are almost as easy to identify with visions of posthuman being as are characters who have become posthuman by way of technoscientific intervention (as in Ghostwalkers, or *Fringe*). In the North American and Anglo-European cultural milieu, our visions of what technologies and sciences, or even

[218] Or, in Foucauldian terms, "the death of Man"; however, I prefer to emphasize here the modernity and humanity to which "Man" has laid claim.

processes of 'natural selection,' might enable us to become are often nightmarish rather than hopeful, seeing the human that comes after us more as "monster" than advancement, so that the genre of the posthuman is as much horror as science fiction.[219] This is the kind of imagining underlying the monstrous hybrids produced by "Guided Human Evolution" in *Fringe*, and the preoccupation with damaged bodies that the TV series' borrows from horror – the posthuman as the human gone wrong.

More traditional monsters such as vampires and zombies can also become posthuman, literally as in films such as *I Am Legend* (based on the novel by Richard Matheson) or the vampire film *Daybreakers*, but also metaphorically. William Patrick Day, for example, reads the hungers and aggression of vampires as representations of what humans might become following the collapse of humanism's grounding and centring metanarratives.[220] From such a perspective, nonhumans are not allegorical representations of the characteristics and quandaries of various human identities but, rather, metaphors for the monstrous loss of the 'human' ideal. But horror and conventional science fiction are not the only grounds on which the 'end of the human' plays out in figurative terms. Science-fictional fantasy can also provide an imaginative, speculative framework where differences are explored, negotiated, and apprehended – sometimes even in their complexities, their instabilities and entanglements, producing a kind of fantasy that might be loosely termed the posthuman supernatural.

As I have suggested with my analysis of The Hollows and *True Blood*, a fictional world where supernatural protagonists coexist with humans after a collective 'coming

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[219] For discussion of the posthuman monster see Elaine L. Graham, *Representations of the Posthuman*, and "Monsters and History: Traditional and Posthuman Monsters" by J. Randall Groves.
[220] See, for example, chapter four ("Post-human Vampires: 'We Are Animal'") in *Vampire Legends in Contemporary American Culture*.

out' can be read as conceptually posthuman (in a less alarmist sense than Day's reading of posthuman vampires). At the literal level of these narratives, vampires, werewolves and the like are explicitly *not* human. They have (however problematically) their own biological and psychological quirks and drives, their own histories of evolutionary adaptation. While their style of discourse is very human and, in readers' terms, contemporary, their motivations, senses and sensibilities are framed as distinct from those of their human counterparts, even incomprehensible in human terms. They are nonhuman, but sentient, intelligent, capable, so that where urban fantasy twists into the science-fictional, the material existence of supernatural beings serves to disjoint the traditional Western/Northern anthropocentric hierarchy. This slight re-alignment, forcing humans out of their exclusive and exclusionary place at the top of the 'chain of being', simultaneously has the potential to validate other than modernist/humanist ways of knowing and interacting with the world. It's not an imaginative revolution but a speculative reframing that makes it possible to apprehend an outside to the original frame.

In such contexts, tensions between the allegorical humanity of nonhuman characters[221] and their asserted *in*humanity might be considered part of a broader ongoing conceptual struggle not just with the crisis of reason and Western epistemology but with the instability of human identity and humanist ontologies in contemporary technoscientific societies. Supernatural characters, then, might sometimes be understood as representations of the contemporary *post*human, in the sense that the posthuman is an experienced mode of being that follows the destabilization of Western/Northern humanism and the liberal human subject. Framed in this way,

[221] In terms of ethnic and sexual minorities, for example.

fantasy fictions' engagements with popular understandings of sciences like genetics (by way of evolutionary psychology, for example) can be seen not just as a way of making sense of scientific ideas circulating in popular culture. Rather (additionally), urban fantasies' interest in the genetic and evolutionary histories of supernatural species may be seen as an intelligible way of responding to the dehumanizing, posthumanizing contradictions and unsustainability of Western technoscientific modernity and its claims about what humans are and can be.

The posthuman supernatural is entangled with science. Where supernatural identity is understood as shaped by rational, 'real' factors such as DNA, science and technology may serve as a bridge linking the not-quite-human and the destabilized human. As discussed in chapter three, in the Hollows' world popular understandings of genetic theory provide an underlying logic for the Inderlander family tree, anchoring the supernatural to human scientific understanding where it might otherwise seem to exceed scientific explanation, and proposing a fusion between Western/Northern technoscience and the alternative science of magic. The posthumanist condition the narrative describes is ontological *and* epistemological, enacting a technoscientific-magical frameshift that rejigs 'reality' slightly, redefines the knowing entities that reside there and asserts alternative means by which that reality can be known, all the while marking the limits, possibilities and continuities of human and nonhuman being and knowing. After "The Turn," the characters live in a world where the "human" of modern humanism is as passé as humanistic Western/Northern technoscience. In a similar (if less explicitly technoscientific) way, the 'coming out' of vampires in *True Blood* presents a challenge to a human-centric universe, even if humans are reluctant to accept it. Popular interpretations of genetic science reframe the "laws of nature" to make room

for vampires,[222] but they also transform the mundane reality in which humans live into a slightly-less-mundane reality populated by, additionally, the supernatural. The modern world of humanism is exposed to have been nothing more than a collective "consensual hallucination"[223] and posthumanist reality is taken as a contemporary given.[224]

The physical, material reality of the nonhuman supernatural functions here, in a way, as an attempt to engage with the unstable humanity of the contemporary 'human' and 'human' knowings when even pop culture recognizes that 'human' as we understand it is a 'modern' Western/Northern cultural fabrication.[225] Contemporary supernatural fantasy claims a kind of 'modernity' for nonhumans as well as humans, apprehending the instability of the lines we draw around these categories but also, in effect, challenging the alignment that allows us to marginalize anyone or anything the categories of 'human' and 'modern' can be constructed to exclude. The posthumanist dimensions of such narratives aren't just about coming up with a more inclusive and pluralistic definition of the human but function more so as indirect expression of lost faith in frameworks that valorize the human and modern at their others' expense.

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[222] In this way, vampires can resist scientific explanations of their 'magic' yet lay claim to the 'natural' and 'scientific' in expressing their species relationship to other forms of earthly life – for example, when Russell Edgington, an ancient and powerful vampire, fuses social darwinism and evolutionary theory to situate vampires at the top of the food chain (3-7). This representation of vampires as products of predatory instinct and evolution resonates with the tendency in werewolf fiction, as Heather Schell argues, to construct "alpha male" characters and behaviours according to popular understandings of genetics via evolutionary psychology.

[223] I deliberately appropriate William Gibson's description of "cyberspace" in *Neuromancer*, drawing on its connotations.

[224] Badmington may warn against critics falling into this complacent acceptance (see the previous chapter), but that doesn't stop pop culture from registering this experiential condition.

[225] The human/nonhuman distinction is one of the implications of the modernity/tradition binary Sandra Harding remarks on in her analysis of Northern science and science studies (but one she doesn't really explore).

In a way, then, the frameshifts enacted by science-fictional fantasy can sometimes, as is the case with science fiction, enact a kind of reimagining of humans' relation with the nonhuman world and of what that world might entail. The anthropocentrisms and disenchantments of humanist and modernist epistemological and ontological frameworks may be seen as sites of unease and tension in contemporary realities, where our emotional relationships and practical dependencies bring our entanglements with the nonhuman into perceptible registers. Posthumanism, in this sense, isn't after the human (see chapter four), but a different way of conceptualizing the entanglements of human and nonhuman, culture and nature, power and knowledge, mind and matter, acting agents and passive objects.

The narratives I discuss in the following pages – the television series *Sanctuary* and the futuristic fantasy series Quantum Gravity – engage to some extent with these multi-register articulations and apprehensions of the posthuman and the posthumanist condition. These texts are also more explicit fusions of science fiction and fantasy than the narratives I have looked at thus far. *Sanctuary* features a contemporary urban setting and a scientist of the fantastic as its lead character. The intersection of science and the supernatural in the series might be seen as a cross between the posthuman science of *Fringe* and Ghostwalkers and the posthumanist supernatural of The Hollows and *True Blood*. Here (in *Sanctuary*) the supernatural, framed as the "abnormal," is recognized only by a minority but it's a global minority, and though this challenge to the modern human isn't widespread, the abnormals (humanoid and not) in the series and the means by which they can be known and engaged with represent an affront to the modern humanist worldview. Quantum Gravity, unlike the rest of the narratives I have looked at, takes place entirely in a future reality, depicting a science-fictional fantasy

world where the entanglement of ontology and epistemology is complete. Tapping into the uncertainties in and entailed by current Western/Northern scientific knowledge and theory (especially quantum physics), the series uses these gaps for fantastical speculation about the transformation of the universe, the knowing entities the universe contains, and how we might know them. The numerous fantastical and technoscientific characters in Quantum Gravity aren't necessarily themselves posthumans (though some of them are) but rather nonhuman entities in a posthuman universe – a web of worlds and entities that disrupt anthropocentrism, and demand new ways of thinking through our humanity, our ways of knowing and our entangled relationships with nonhumans and the ethical issues that these conceptualizations and realities entail.

Abnormal Reality

> Perhaps the world resists being reduced to mere resource because it is – not mother/matter/mutter – but coyote, a figure for the always problematic, always potent tie of meaning and bodies. Feminist embodiment, feminist hopes for partiality, objectivity and situated knowledges, turn on conversations and codes at this potent node in fields of possible bodies and meanings. Here is where science, science fantasy, and science fiction converge in the objectivity question in feminism. Perhaps our hopes for accountability, for politics, for ecofeminism, turn on revisioning the world as coding trickster with whom we must learn to converse. (Haraway, *Simians* 201)

Here, in an essay called "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective," Donna Haraway is engaging with the ontological entanglements of feminist epistemology and pointing to the imaginative and ethical potentials of feminist speculative frameworks for knowing and engaging with the nonhuman world. Fantasy fiction is rife with trickster worlds and trickster figures. It also, occasionally, features an actual coyote of sorts, such as the "coyote shapeshifter"

protagonist of Patricia Briggs's Mercy Thompson urban fantasy series.[226] As I noted previously, human-like supernatural beings, in their relation to the 'normal' human population, may be read as allegorical representations of different kinds of human, whether those differences are imagined in terms of gender, race, sexuality or ability. But supernatural characters and trickster figures can function in relation to other boundary formulations as well, such as the lines we draw between human and nonhuman.

Where we are deeply attached to the lines that shore up the normative human, the figures that trouble them can come to seem like monsters. But monsters can, in turn, call us to question such attachments. As Elaine L. Graham argues,

> Monstrous creatures everywhere invite us to entertain … 'fabulations' about the interrelationships of humans, artefacts, machines and animals in which the naturalism and inevitability of axiomatic concepts of 'human nature' are deconstructed. (39)[227]

'Monstrosity,' Graham importantly points out, is hybrid. While the inhumanity of monsters can shore up normative conceptions of the human, "marking the boundaries between the normal and the pathological," monsters' failure to sort comfortably into familiar ontological categories functions to "expos[e] the fragility of the very taken-for-grantedness of such categories" (39). In the magical/fictional worlds where 'monsters' reside, humans and things, minds and bodies, are not necessarily what we have conventionally imagined them to be. But further, as the above-quoted passage from Donna Haraway suggests, mythical figures, trickster-monsters, can also entail a rethinking of the world itself and the (inter)relationships of the entities residing there. Boundary-troubling tricksters, near-human or not, can demand a broader interrogation

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[226] See http://www.hurog.com/books/moonCalled.shtml, accessed July 9, 2012.
[227] In her use of "fabulation," Graham draws on the work of Marleen Barr, who sees fabulation as a kind of "social critique" enacted by the "cognitive estrangement" of feminist science fiction, but Graham's usage is somewhat broader (55-59).

of the way we make sense of contemporary reality. "Myths and Monsters" thus can't easily be written off as "wild fiction" standing in contrast to "[s]cientific fact" (38)[228] but might be understood as 'companion species' to Haraway's "simians, cyborgs and women" (Graham 60).[229]

The television series *Sanctuary* (beginning in 2007 as a web series but airing from 2008-2011 mostly on specialty science fiction stations) is rife with monstrous trickster figures, monstrous and trickster-like not just for their often hybrid 'natures' or difference from ordinary humans but for their failure to fit into orthodox scientific paradigms. The relation of this speculative reality to our own, and the ambivalence such figures generate, is captured in the show's synopsis:

> *Sanctuary*'s story takes place in a world that is different from our own, yet feels familiar. In *Sanctuary*, monsters move secretly throughout the world, both threatening and threatened, while one woman and her team search them out.[230]

In the "Sanctuary" for which the series is named – a research and containment facility and network led by a woman, Dr. Helen Magnus, who has herself become "unnatural"[231] – the word "monster" is eschewed for the term "abnormal," meant to be a kinder label for bodies marked by strange manifestations of difference (1-1). While this seems an

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[228] Here Graham is discussing a 1998 exhibition at the Natural History Museum in London with a "rationalistic preference for the sober facts over the magical or fantastic" (38). I viewed a similar exhibition at the Canadian Museum of Civilization in 2008 and witnessed the same dedication to applying the 'insights' of modern, Western science to explain away the 'mysteries' of the historical and mythical fantastic.

[229] In *The Companion Species Manifesto*, Haraway describes "cyborgs as junior siblings in the much bigger, queer family of companion species" (11). For Haraway, the term *companion species* "is less a category than a pointer to an ongoing 'becoming with'," a marker that it is not so much categories that need reworking – "it is the patterns of relationality and, in Karen Barad's terms, intra-actions at many scales of space–time that need rethinking" (Haraway, *When Species Meet* 16).

[230] See http://sanctuaryforall.com/index.php, accessed July 9, 2012.

[231] Once a Victorian scientist, Magnus chose to infect herself with the blood of ancient vampires as part of a scientific experiment; the result is extended life and suspended aging. A century and a half after her birth she appears to be barely middle-aged and in fine 'ass-kicking' form, like any good urban fantasy heroine.

assertion of the normality of privileged humans (such as the young white middle class male, Will, who Magnus takes on as an assistant) the proliferation of abnormals in this imagined world – some who seem quite human, some who do not – emphasizes the instability of anything assumed to be "normal" or "natural." Nature is revealed to include a wealth of entities demanding ethical engagement – humanoid, intelligent and otherwise[232] – so that reality and our ways of engaging with it have to be reconceptualised.

More like *Fringe* and Ghostwalkers than *True Blood* or The Hollows in the covertness of its strange science and abnormal realities,[233] *Sanctuary* nevertheless enacts a frameshift in the terms of reality. The change in worldviews that the series' reality demands gets played out on-screen in the opening episodes, when "forensic scientist" Will Zimmerman is brought into the Sanctuary team (the American node in a network of Sanctuaries scattered across the globe). A childhood hallucination linked to the death of Will's mother is revealed to be an actual encounter with the abnormal, and Will is quickly forced to accept the existence of a vast number of species and phenomena that are generally thought to be the stuff of myth and imagination. Humanoid abnormals, he learns, live precariously as misfit individuals but also as minority populations, which suggests perhaps that these almost-human characters might (again) be read as allegories of human minority populations.[234] But not all

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[232] Variations of abnormals are too numerous to list in full. The North American Sanctuary team includes, in addition to Magnus, a werewolf (Henry) and "Bigfoot," and they sometimes receive aid from the Sanctuary's abnormal residents, such as a telepathic mermaid named Sally (2-9). But other nonhumanoid species, such as the giant vampire squid (2-8), are also said to be highly intelligent.
[233] The existence of "abnormals" isn't public knowledge, but there are numerous individuals and parties for whom these entities are part of accepted reality.
[234] Although life itself may be precarious, some populations and social groups experience precarity more forcefully than others.

abnormals are humanoid and their existence doesn't just destabilize the human but the very idea of "nature." Some abnormals are 'made' or made-as-such, evoking what humans might become, but more than this, the abnormals in the series simply by their existence seem to demand a posthumanist worldview, as anthropocentric humanist epistemologies and ontologies are revealed to be inadequate for describing the world as it actually is.

Magnus's Science/Fiction

Though it airs on science fiction television networks and features a scientist as a main character, *Sanctuary* is – to judge by its contemporary setting, its unorthodox sciences, its 'monstrous' characters and its 'kick-ass' female protagonist – as much urban fantasy as it is science fiction. Advanced contemporary technosciences crop up repeatedly in various episodes (tablet computers especially), but ultramodern and futuristic Western/Northern technosciences are more often used by Magnus's adversaries. This is epitomized in a multi-episode arc that sees the Sanctuary network pitted against a group called the Cabal. Despite the metaphysical associations of its name, the Cabal practices a version of near-archetypal amoral (and thus dangerous) ultramodern technoscience, and their offices and research facilities might as well belong to any high-tech modern corporation.[235] Magnus, in contrast, works surrounded by Gothic architecture and Victorian instruments,[236] not eschewing modern technoscientific capabilities but combining them with the insights and tools of older

[235] Much like Massive Dynamic in early episodes of *Fringe* or the military-industrial-capitalist complex that first houses the Ghostwalkers.
[236] Drawing perhaps on the recent aesthetic popularity of steampunk: a "modern subgenre whose sf events take place against a nineteenth-century background" but also, since approximately 2006, "a genre of couture" featuring the Victorian alongside the "retrotech" (http://www.sf-encyclopedia.com/entry/steampunk, accessed July 9, 2012).

knowledge practices that are, it is implied, less narrow-minded. This is not precisely the "posthuman science" evoked by *Fringe* and Ghostwalkers – a glimpse of what human science might become – nor is it the scientific magic practised by Rachel in the Hollows. Rather, Magnus's science is a kind of anachronistic patchwork technoscientific knowledge and practice demanded when humanist conceptual frameworks are revealed to have always been unreliable. In this, the series' science might be seen to parallel its genre.

Magnus is herself a 'made' abnormal but not in the futurist or transhumanist sense. Rather, she and her Victorian colleagues were changed by injections of a serum derived from pure vampire blood, remade by ancient wisdom now lost but still embodied in the cells of beings long gone. As with many visions of human transformation, the results were unpredictable and ambivalent, but even when these characters are dealing with what might be called the 'supernatural' they are represented as rational scientists.[237] Taken as part of a program of scientific knowledge-seeking and experimentation, the vampire blood presumably enhanced some kind of innate potential, causing extended life, amplified intelligence, or an increased propensity for violence, depending on the recipient, or merging the fantastical with the science fictional in new talents, such as the ability to teleport or to manipulate electrical energy. Instead of demanding a futuristic or magical science, 'abnormality' thus demands a science that leans toward the Gothic, drawing on the mystical unknown as well as the scientific known and exposing the uncertainties and incompleteness of orthodox science. Similarly, the vulnerability of human normalcy is continually exposed

[237] In some moments, especially in flashbacks set in the Victorian period, Sanctuary evokes the "Victorian urban Gothic," where "the rational and irrational" are characteristically combined, so that "even in the realm of magic and unholy spirits, the scientific temper is still of use" (Spencer 91-92).

as the series develops, as supposedly 'normal' human characters are revealed to be abnormals, or find themselves becoming abnormals for a short period of time.[238] Much like the monsters that Graham discusses, the abnormals of *Sanctuary* function in some ways to valorize the normatively human, but at other times the show encourages and embraces the multiplicity and mutability of human/nonhuman difference. It is this latter tendency that makes the abnormals of this show posthuman, but rather than suggesting humans' future evolutionary path (by 'nature' or design) abnormal becomings in *Sanctuary* point foremost to the illusion of stability rather than a state of increasing boundary decay.

In fact, *Sanctuary* frequently calls the lines between illusion and reality into question. By its very construction the series combines the real and the imagined, using live actors performing in computer-generated sets,[239] but the composition of its characters also draws on various levels of fiction and reality. Magnus is unique to *Sanctuary* but her Victorian colleagues function as allusions to imaginative storytelling and science-fictional reality: 'real world' suspect in the nineteenth-century Jack the Ripper killings, John Druitt, is Magnus's former romantic partner; Arthur Conan Doyle's fictional character John Watson becomes in the series Dr. James Watson, the 'real' Sherlock Holmes; and 'real world' scientist Nikola Tesla becomes a descendant of vampires and a re-actualized vampire himself. In addition to this manipulation of fact

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[238] Will is kidnapped and temporarily transformed into a pit-fighter in one episode (1-10), and Magnus's daughter, who has untapped abnormal potential, is activated and remade into an obedient weapon by the Cabal and dies in an attack on the Sanctuary (2-1 and 2-2). Other 'made' abnormals are frequently not self-actualizing agents but serve as tools of power organizations who use technoscience to transform humans into abnormals to gain money or power.

[239] From the series' website: "*Sanctuary* is one of the only series to shoot extensively on green screen using extraordinary visual effects and virtual sets" (http://sanctuaryforall.com/TheShow/Synopsis.php, accessed July 9, 2012).

and fiction at the level of character, the show works uncertainties about reality and illusion into its plot. The Sanctuary team encounters abnormals who can manipulate perception, such as an illusion-creating creature in the Himalayas (1-5), for example, or the telepathic mermaid Sally who implants a holograph in the mind of a susceptible abnormal crime boss (2-9). In one episode we learn Magnus even implanted a toxic abnormal in her brain to convincingly play the role of leader-gone-mad and 'out' a leak in her organization; her colleagues must untangle a web of truth and deception in order to heal Magnus and catch the traitor (2-7). The lines between reality and fantasy are themselves unstable in the series, an ongoing boundary project.

Abnormal Ethics

One of the many interesting things about *Sanctuary* (and although the show has its flaws these interesting things are indeed numerous) is the ethical framework it asserts from the start, highlighted in taglines like "Even things that go *bump* in the night need protection."[240] In the two-part series opener (1-1 and 1-2), as Magnus recruits Will to her team, she emphasizes the ethical dimensions of her work, and ethical concerns about the relations between abnormals and 'normal' humans recurrently feature in the show's narrative tensions. Magnus and her recruits are the 'good guys,' so it's not that surprising that the show would seek to justify their actions and interactions with abnormals as in support of the 'greater good.' But what I find particularly intriguing and productive is that these 'good guys' don't always get it right, and that ethical issues aren't depicted as always exclusive to their engagements with human-like entities. One episode in particular foregrounds ethical engagements with nonhumanoid abnormals, in a lesson that comes not from the Sanctuary team but from a temporarily transformed

[240] See http://sanctuaryforall.com/index.php, accessed July 9, 2012.

human they are trying to help (2-4). The man, Walter, is trapped in a suit made up of a colony of tiny abnormals operating as a collective; they feed on some dimension of Walter's being in exchange for granting him the superhero-like powers he desires. When Magnus discovers the suit is taking more than Walter's body can stand, he resists the idea of killing the colony, and in return (or so it almost seems), the suit leaves him of its own volition when he is emotionally and psychologically willing to let it go. These tiny abnormals are so unlike us, and Magnus's attempt to control them so much less effective than Walter's peaceful letting be, that Sanctuary's world seems almost to demand, at least in certain moments, a rethinking of agency and ethics.

Knowing Subjects, Acting Objects, Posthumanist Entanglements

"Modern man" may believe he is a free-willed, rational individual, yet this epistemological and ontological, and in many ways this scientific, ideal is actually an unstable "crisis" figure, as his many 'others,' including figures such as the abnormals in *Sanctuary*, demonstrate. The modern human, as a knowing subject, is a "disembodied body" whose masculine and modern rationality relies upon his distance from the materiality of bodily functions and passions associated with the feminine, the child, the animal, even while his reason requires materialization in a masculine body. His claim to epitomize and model humanity and modernity has been upset by the social, political, legal and critical demands of his 'others' – the ongoing struggles for recognition and basic human rights fought by women, queer and transgender people, people with disabilities, peoples of colour and of the "Third World." Clearly, the complexities of identity and difference, ways of knowing and being in the world, cannot be adequately understood through the binary structure of phallogocentric discourse.

Opposing the cultural centrality of phallogocentrism, numerous contemporary scholars (many of them feminist and postcolonialist) have pursued the critique and deconstruction of such binaries to expose the identities and knowings that they exclude, destabilizing the predominance of universalist (white, Western/Northern and so on) framings of subjectivity and epistemology. Their work is, thus, a challenge to what "human" has commonly and historically been understood to mean and exclude,[241] but also has implications for how we conceive of human relationships with the nonhuman world, as I have begun to suggest in this and the previous chapter. Where feminist theory has recognized and insisted that "knowledges cannot be neutral or objective," "[t]hey attempt to create new subject positions of knowing *as well as the object known*" (207, emphasis).[242] This isn't just about asserting the importance of women's issues, although that has been a crucial site of intervention. It also isn't just about acknowledging the bodies of researchers, what they study and how they know it, although that too has been a significant and crucial part of anti-sexist critique.[243] But

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[241] See for example, Sandra Harding's observation that the "not fully human" is a category women, "primitives" and "tradition" get consigned to in order to establish the desirability of the white, the masculine, and the modern (45, 193). Cf. Butler in *Bodies That Matter*, where she notes phallogocentrism's subordination and exclusion of several 'others' in the man/not man binary – women, slaves, children, animals – in order to produce the category of rational man (48-49). Cf. also Haraway: "The discursive tie between the colonized, the enslaved, the noncitizen, and the animal—all reduced to type, all Others to rational man, and all essential to his bright constitution—is at the heart of racism and flourishes, lethally, in the entrails of humanism" (*When Species Meet* 18).

[242] Grosz offers an analysis of the work of Luce Irigaray as "[a]rguably the most developed—and neglected" in this vein (208), revealing "a *politics* of truth, logic, and reason" (209) and pointing out that "[t]he fact that a single contested paradigm (or a limited number thereof) governs current forms of knowledge demonstrates the role that power, rather than reason, has played in developing knowledges" (210).

[243] Looking outside feminist theory for relevant work, Grosz lists a range of challengers to the idea of "unmediated" "objective" knowledges, including Heisenberg, Kuhn, Lakatos, Feyerbend I192), theorizers of the inscription of the body such as Nietzsche, Foucault, Deleuze (196-199) and of the "lived body" such as Freud, Lacan, Merleau-

reconceptualising "objects known" also entails recognizing that "objects" are, in fact, material actors as well.

As I noted previously, the "crisis of reason" isn't just a crisis of epistemology but also of ontology, a breakdown in the "Modern Constitution" (as per Latour) by which we seek to separate nature and culture, subject and object, even while our worldly practices and experiences make firm distinctions impractical if not impossible. As Haraway insists, "There are no pre-constituted subjects and objects, and no single sources, unitary actors, or final ends. … A bestiary of agencies, kinds of relatings, and scores of time trump the imaginings of even the most baroque cosmologists" (*Companion Species* 6). Such agencies of the nonhuman world are not just the purview of science and technology studies – by way of actor-network theory (or object-oriented ontologies),[244] for example. Reframings of agency have been important to feminists (such as feminists working with new materialist and posthumanist frameworks) particularly in their rethinkings of the relationships between science and knowledge, nature and culture, matter and discourse. Significant among such work, and particularly useful for approaching the posthuman possibilities of science fiction and fantasy, is (as I suggested in chapter four) Karen Barad's reading of science, agency and ethics by way of the "philosophy-physics" of Neils Bohr.

Barad's interpretation of quantum physics relies on a contrast between Bohr's understanding of observation and reality with the classical view that there is an

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Ponty (200-202). As Adam points out, cognitive linguists like Lakoff and Johnson have argued for considering the role of the body, in interaction with our environment, as the source of our mental schemata for making sense of order and structure (372). She also notes that "the view of natural science, as the epitome of propositional knowledge is seriously challenged by modern work on the importance of laboratory practices and discourse between networks of actors (Latour and Woolgar, 1979)" (Adam 372).

[244] See, for instance, Ian Bogost's *Alien Phenomenology: Or What It's Like to be a Thing* (2012).

autonomous world that exists and that our scientific observations give an objective, transparent account of it (168-69). Instead of "a Cartesian (inherent, fixed, universal) subject–object distinction," and a worldview that imagines "reality as either prior to or outside of language,"[245] Barad offers us a philosophy and a view of science that situates humans as participants "*within* nature" and objects as "things-in-phenomena" ("Meeting" 176). Among several other implications, this rethinking of science and reality grants nonhuman entities a kind of limited, non-speaking agency so that it becomes impossible to see 'nature' as "a passive blank slate" that we can represent any way we want or as a pre-determined reality that speaks for itself (181). Instead, we have an asymmetrical relation of inseparability between 'observer' and 'object,' where "nature has agency" and "we do the representing" (181).[246] This is what Barad terms "agential reality" (176).

Barad's framework is not simply an epistemological position but an ontological claim. *Agential realism* describes a "material-cultural" reality where "*objectivity is literally embodied*" and "*knowledge claims*" are "*ground[ed] and situate[d] … in local experiences*" ("Meeting" 179-180, original emphasis). And although she insists that objects are not pre-existing entities, Barad's framework isn't a rejection of boundaries

[245] I.e., the separation of "subject–object / culture–nature / word–world" (175).
[246] From this viewpoint, "*observations do not refer to objects of an independent reality*" (170, original emphasis); rather, an observation refers to a "phenomenon" – a nondualistic whole comprising the interaction of an "object" and "agencies of observation," where the distinction between the two isn't preordained or fixed, but contingent, constructed in a particular context, and non-separable (170-171). Latour develops a similar idea (without Barad's feminist foundations) in *We Have Never Been Modern*, where he unpacks the "constitutional guarantees of the moderns" to reveal their internal and mutual contradictions, including the idea that transcendent "Nature" pre-exists humans' knowledge of it, despite the 'fabrication' of natural "laws" through the practices of experimentation and observation in the laboratory (30-31). Later, in *Politics of Nature*, he further situates nature(s) within the human/nonhuman 'collective', with nonhumans as active but non-speaking members and scientists as their representatives or spokespersons.

but a form of "*interrogation*"; she follows Donna Haraway in defining objects as "boundary projects," so that boundaries aren't irrelevant but necessary for meaning making (181-182, 187). "The placement of the boundary becomes part of what is being described…" (182) and thus "[k]nowledge projects entail the drawing of boundaries, the production of phenomena which are material-cultural intra-actions" (183), with all the responsibilities and accountabilities that implies.

While Barad doesn't want to abandon the goals of the Enlightenment (180),[247] she is, importantly, emphasizing the need for "*critical reflexivity*" and "*an ethics of knowing*" in our engagements with the world (182-183). Sherryl Vint describes Barad's work as a "performative posthuman ethics," where "posthuman" isn't "just beyond humanism or the human-as-currently-conceived, but rather a 'post' to an anthropocentric world" ("Entangled Posthumanism" 318). But what proceeds from "this new ethics is not a matter of reconceptualising the place of humans in the universe, but rather a matter of recognizing the actual situation of our 'real' relation to the universe on the level of the basic units of reality," Vint rightly insists (316). Thus one of the many demands made by Barad's "conceptual framework" is a "radical" reconsideration of "our notion of reality" in ways that, as Vint asserts, parallel many of the "thought experiments of science fiction" (317-318), enabling us to "think about the intra-actions of what we call science, what we call society, and what we call sf" (318) and to see "the discursive structures that make science and those that make sf as part of the same intra-acting and dynamic system" (319). I would add fantasy to this list of entangled intra-actants and suggest that Barad's work doesn't just imply a "blurring of boundaries … between 'hard' and 'soft' sf" (Vint 317) but that it also provides a means of thinking

[247] Cf. Wolfe on Foucault's distinction between Enlightenment and humanism. Barad doesn't really specify here which goals she wants to keep.

about the ways in which reality, and the boundaries between human and the nonhuman, are reconceptualised in science-fictional fantasy. Such a posthumanist understanding of science, reality, and the entanglements of the human and nonhuman is essential to a critical reading of Justina Robson's Quantum Gravity series.

Post-Quantum Futures

Within the discourse of science, the phrase "quantum gravity" points to the puzzles and the possibilities of current scientific understanding, specifically the mismatch between quantum mechanics and theories of gravity and the quest for a unifying theory that satisfactorily explains both.[248] Quantum Gravity is also the title of a series of (five) futuristic fantasy novels by Justina Robson. Robson's fictional universe, a multiverse really, centres on a near-future version of Earth, but the action crosses over into several interpenetrating, parallel and dramatically distinct "realms": "Zoomenon" (the world of "elementals"), "Alfheim" (the home of the elves), "Demonia" (homeland of the demons), "Faery" (home of the fey), "Thanatopia" (the realm of the dead), and "interstitial" or "I-Space" (the space between worlds where immaterial energies precede material actualization). Human, nonhuman and quasi-human entities have been brought into recent contact – according to human accounts – after a quantum bomb disaster ostensibly ruptured the fabric of space-time, opened fault lines and portals between the different realms, and alerted humans to the existence of other worlds and peoples. Earth is renamed Otopia as an indication of how drastically things

[248] Physicists' understandings of quantum phenomena work well at the micro-level but less so when applied to cosmology, and quantum mechanics and theories of gravity have so far only been awkwardly, inadequately and speculatively brought into conversation. See, for instance, comments by Steven Best & Douglas Kellner, in *The Postmodern Adventure*, describing "a successful quantum theory of gravity" as "the decades-long dream of physics" (107).

have changed: geographies, politics and economies – in fact, reality itself. The nations of the twenty and early twenty-first century are – materially, politically, and contentiously – artefacts of the past, and humans have been displaced from any firm sense that the known universe revolves around them and their imagined-to-be-supreme intelligence. More than a postmodern suspicion of metanarratives or a nihilistic rejection of truth, shifting humans from the knowledge centre of the universe, entangling the human with other entities and other ways of knowing, Robson's novels work as a posthumanist assertion that knowledge is situated and partial and reality up for grabs.[249]

Three of the known worlds (Alfheim, Demonia and Faery) are populated by beings who are sentient in a way recognizable to humans, at least superficially. But there are other entities in the narrative, active agents, whose consciousness and intelligence cannot be so easily gauged, and several characters who exist in ways that blur the lines between races and kinds. Lila Black, the series' primary protagonist, is herself a hybrid character, a cyborg – thus literally posthuman and invoking a figure common in Robson's work.[250] In the opening novel's present – more than a decade after

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[249] As a cyborg character named Sarah Bentley implies in book five, it's not truth that is unreliable but the patterns and meanings that sentient beings imagine they find in it (*Down to the Bone* 342).

[250] In their focus on posthuman technoscientific topics such as artificial intelligence, nanotechnology, cyborgs and the technoscientific future of humanity, or, what versions of us come about after humanity as we know it has come to an end, Robson's earlier novels have been described as hard science fiction. See http://justinarobson.blogspot.com/p/justinas-books.html and http://www.guardian.co.uk/books/2003/jun/07/sciencefictionfantasyandhorror.featuresreviews (accessed September 13, 2011). *Silver Screen* and *Natural History* feature "a self-evolving AI" and a posthuman hybrid, respectively, as primary characters. The Quantum Gravity series follows in this posthumanist pattern, foregrounding the life of once-normatively human protagonist Lila Black as she attempts to deal with her now-cyborg embodiment. See also Mitchell's analysis of *Natural History* in *Science Fiction Studies*. The challenge to binaries of human/technology, individual/mass, and self/other that Mitchell reads in *Natural History* resonates in Quantum Gravity as well. A line in book five, *Down to the Bone*, might be an indication of Robson's knowledge of the

the bomb – relations between the worlds and their peoples are still being negotiated; Lila represents a focal point and petri dish for this negotiation through her secret service missions and interpersonal interactions with individuals from other realms. Born a relatively ordinary human girl, Lila entered the diplomatic service of a post-national government as a young woman, turned spy while on a rare mission in Alfheim, and was nearly killed by elven magic after her espionage was discovered (*Keeping It Real* 121-125). Once returned to her government employers, badly damaged, Lila agreed to be remade into a "tokamak"-powered, AI-enhanced cyborg warrior (15), her body now a welding of what she eventually learns is intelligent alien[251] technology and human biology (*Going Under* 126-130). The practical and ontological challenge she poses to ordinary human being is not quite dream or nightmare, but a bit of both, part anxiety and part promise.

Lila literalizes Donna Haraway's reading of the cyborg as a material-semiotic figure. Made, as well as born, she is a contemporary subject with a non-natural and non-innocent origin story. As a walking weapon and an expensive investment, she is implicated in and perpetually working to resist military and capitalist technoscientific forces of control. As the series progresses, Lila's sense of self and self-ownership, as well as her embodiment, are constantly shifting, in process, becoming, literalizing a

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history of feminist cyborgs in science fiction, as one of her characters, in self-description, alludes to the James Tiptree, Jr/Alice Sheldon story, "The Girl Who Was Plugged In" (218).

[251] The technology is alien in the sense that it doesn't come from any of the currently documented worlds and their peoples. The nature of this 'alien' is explained to some extent in later novels, especially book five, but its identity and mostly nonconscious and prematerial intelligence remains difficult to grasp. This technology is revealed to be derived from and connects Lila to something known as "The Signal," the "machines," which turns out to be the prematerial record of possibilities, "information" about "what could be": the past, present, future, and "all that never was" (341-342). Some of these possibilities materialize in Lila and her fellow cyborgs.

fragmentary and unfixed postmodern subjectivity experienced widely in the developed North/West.[252] However, the remaking of Lila as an *actual* cyborg evokes the post*human* more than the post*modern*; she is not just fragmentary but also an ontological challenge, as are the only approximately humanoid elves, demons and faeries she engages with, whose intelligence, societies, worlds and hybridities present at least a fictional upset to humans' anthropocentrism.

The inner and outer surfaces of Lila's body are sites of contact and entanglements with others. In addition to the transformations wrought by her initial remaking as a cyborg, Lila is further transformed by a second very intimate encounter with elf magic so that what was initially a painful and imperfect fusion of human biology and metal machine in her body has been repaired.[253] Now a combination of human, alien machine, and magical "elementals," Lila's body and being continues to transform through subsequent narrative developments, in an erasure of the lines between self and other so that she no longer knows where the human ends and the machine begins. In the first three novels she shares her material body with the aethereal ("andalune") body of an elf necromancer after his physical body is killed (*Keeping It Real* 189-191) and he continues as an internal companion until he regains a new body while in the depths of Faery (*Going Under*). While still 'hosting' this elf, Lila dons a very old faery who exists now as a piece of enchanted fabric and she wears this mutable faery dress in its various

[252] It is worth noting that, unlike the other authors and productions I have analyzed, Robson is British. However, her series takes place not in post-quantum England but a radically altered version of what had been the United States. Lila is the equivalent of an American, and the narrative imagines, at least as far as Otopia goes, a North American rather than a global, European or British futuristic imaginary. Robson's representation, from an 'outside' perspective, of the centrality of even a reimagined United States may mark the way in which the US currently serves as a metonym for the Northern/Western technoscientific contemporary.

[253] In a therapeutic melding of her "chi" with that of a wounded elf agent, to heal him, Lila is herself healed (*Keeping It Real*).

forms (the dress choses) for almost the entire remainder of the series. At the same time, her technological parts are gradually fusing more completely with her biological ones so that by the time she returns from Faery, leaving the re-embodied elf behind, she is still completely hybrid but with no visible or perceptible borders between what is and what is not Lila.

The focus on Lila the cyborg as a main character leans toward conceptions of the posthuman as a successor to the human. However, Lila is a prototype, initially one of a kind, and though the Agency she works for later makes other cyborgs for a while, what will come of this fusion of human matter with alien technology is at first unclear, unpredictable and not easily generalizable. Furthermore, Lila's transformative encounters with aethereal forces, including her temporary hosting of the dead elf, are mostly unplanned and not easily if at all repeatable; she represents an uneasy if hopeful experiment rather than a new stage of human evolution. Like the hybrid popular posthumans that Myra Seaman discusses (such as the Cylons from the remake of television's *Battlestar Galactica*), or the 'psychic' posthumans of *Fringe* and Ghostwalkers, Lila maintains a recognizably human identity within a posthuman body through the narrative's exploration of her affective experiences and emotional self.[254] However, the narrative is not particularly concerned with her status as human or not (she mostly feels human so she mostly is), but more with how her posthuman

[254] See Seaman (259). After much uncertainty throughout the series, Lila asserts that she is still human, her own "self," however much that self has been superficially changed (*Down to the Bone* 343). Even though she fails to acknowledge it here, it's clear that what that self is has been dramatically changed; one of the most insightful implications of her feeling here is that although she claims human "nature" is "absolute, so definite and so inescapable," her own experience illustrates that it is also, within limits, mutable and always in a process of becoming.

embodiment, and that of several other characters, shapes their interactions and entanglements with other entities and with the worlds they find themselves in.

Elves, demons and faeries – all intelligent, sentient "species" and "races" – feature prominently in the plot as both major and minor characters, and their worlds (Alfheim, Demonia, and Faery, respectively) intersect and overlap with the human world. Robson's use of racial and species discourse to describe her human and nonhuman characters is another kind of boundary complication, underlying both the similarities and differences of these 'kinds' of beings and the way in which the quality or character of those differences shift with shifting discursive perspectives. But shifting differences aren't only discursive. In Quantum Gravity, some beings change not just according to perspective but materially, and according to experiential reality. Demons and faeries upset notions of normative fixed embodiment, as demons come in a vast array of changeable forms, mixing physical characteristics of various species and sexes, and faeries change shape to suit the realm they currently inhabit. For instance, Lila visits and makes deals with a demon named Madame Des Loupes who is part woman, part crow, part peacock and possesses a "handsome phallus" (*Selling Out* 143), and Lila is also involved with (and at one point marries) a vaguely dog-shaped demon named Teazle, who frequently, with some little effort, appears in a humanoid form. Faeries also change shape but not just at will; for example, faery wings aren't visible in the human realm, where faeries take on humanoid forms, and Lila's faery colleague Malachi appears more humanoid or more catlike in different realms and different space-times, even dematerializing into shadow when reality becomes particularly unstable. Humans are not so malleable, but some, like a young woman named Jones, have enough affinity with magical forces to travel the spaces between worlds, and after prolonged

interaction with powerful faery beings, even many humans are magically, materially changed.

Lila is the focal point for much of the narrative's speculation and adventure, the most extreme hybrid in a cast of hybridities but she is not the only one, as my description of demons like Madame des Loupes indicates. Elves are also born hybrid in a sense, with material and magical – aethereal or andalune – bodies. But one rare elf-demon hybrid named Zal particularly illustrates the characters' shifting identities, subjectivities and embodiments. In book one Lila is hired to protect Zal, introduced as an elven rock star, and she eventually marries him as well as Teazle (in a complex three-way entanglement of attraction, emotion and politics). Like Lila, Zal was in a sense deliberately made, the child of an interracial elven couple.[255] Born an elf who becomes a secret agent, Zal remakes himself into an even more hybrid entity, travelling to Demonia and becoming literally part demon, despite the supposed 'natural' antagonism between elven and demon magics and cultures (*Keeping It Real* 79-80, 176). Zal also performs a kind of human identity after relocating to Otopia, picking up human slang and fronting a rock band, something that is apparently completely counter to elf nature (*Keeping It Real* 11-12). Later Zal nearly dies in Faery (book three), and spends 50 years in a rag doll body (book four), after which he is more shadow than matter and has to feed on light in order to maintain the stability of his material form (book five). As the series progresses, the instabilities in Zal's being (the lack of fixity, of unity…) proliferate rather than resolve.

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[255] In book five we are told that Lila and Zal were made hybrid by the same powers for the same reason – to serve as weapons against an expected interdimensional enemy identified as the "Titans." In a typical narrative twist for the series, Lila, Zal and Teazle – who also gets transformed by faery magic – end up temporarily fusing and uniting with the Titans they were supposedly meant to oppose.

Even "normal" human identity and embodiment are changed after the quantum bomb introduces humans to beings and forces from other worlds. This is intensified after a 50-year period (off-stage) in which a particularly old and powerful faery called The Hunter roams Otopia to rid the world of dangerous magical beings called "Mothkin" (*Chasing the Dragon*). The Hunter leaves behind him a population of "children" who are hybrids of the old human world and the new. As one girl (who seems, initially, to be among these children) explains,

> in the last few generations born since the Moths there's been a population explosion in people with powers – psychics, seers . . . you can stick a bundle of names onto all the combinations of psionics out there right now. … It's so widespread now they say that the humans will be extinct in another hundred years. … everyone has someone close who's a changeling, though ninety percent of them are barely any different. It's not like you can pick them out by race or colour or creed. (*Down to the Bone* 220-221)[256]

On top of this 'accidental' change in human being is the potential for humans to change themselves. Many of the additional cyborgs made after Lila have now gone "rogue," and some are selling off machine body parts to "[c]riminal markets … full of upgraders" who "will make you over into a machine in two days, for the right price" (221). In this respect – in the suggestion that the normative human has been made historical, archaic, obsolete – the Quantum Gravity series marks a kind of conventional pop culture posthumanism alongside its more complex apprehensions and articulations. The quantum bomb introduced a world in which the human as we knew it has come to an end.

Yet, more importantly, for the characters in Quantum Gravity, boundaries are under persistent interrogation and reconstruction, with ambivalent possibilities and effects. The now-porous lines between worlds allow the passage of people but also

[256] This reference to "psionics" is one of several hints of Robson's familiarity with the history and conventions of the science fiction genre.

aetheric and material forces, demanding new political manoeuvres, new diplomacies, new strategies for security and defense. Boundaries and borders between species (races) are also ongoing issues, a challenge to inter-species communication and understanding, a factor in hostility between and within peoples.[257] Robson's protagonists tend to complicate any attempts to protect or reinstate stable boundaries: travelling between worlds and materialities, exposing mixed genealogies, performing and transforming identity across gender, racial and species lines, even between life and death, refusing to be entirely what they seem. And then there's Lila: part human woman, part human-constructed but alien-designed technology, changed by elf magic and elemental energy, host sometimes to other beings, and producer (in book five) of nonhumanoid clones of herself. As real entities, actual and potential realities, these beings and becomings indicate that the series' fictional world is, literally, not just postmodern, and posthuman, but a posthuman*ist* engagement with the limits of anthropocentrism.

Quantum Gravity

Quantum Gravity is posthumanist in the sense that, although most of its Earth-born, or "Otopian," characters appear to be conventionally human in body and psyche they live in a world where their anthropocentric and humanistic understanding has been profoundly shaken. The quantum bomb event of 2015, now a matter of much-contested near-history, opened chinks in the universe so that Otopian humanity has been forced to acknowledge other worlds, other nonhuman intelligences, including elves, faeries and demons, and their other ways of knowing and interacting with the

[257] Such as the antagonisms between demons and elves, or demons and faeries, as well as the elven civil war.

worlds. Human knowledge, it turns out, is limited along multiple fronts: not only have humans been entirely unaware that other realms existed, but the full range of aetheric (magical) forces and phenomena simply cannot manifest in Otopia – the most matter-bound of all worlds – and humans lack the conceptual and experiential frameworks to make sense of aethereal beings and powers.[258] Human science is inadequate to explain or account for the reality of aether and other immaterial or not-quite-material things, but in other realms, aethereal study and practice can take on the qualities of a science. The conditions coinciding with the eruption of the "QBomb" changed known reality for humans but also how reality can be known and to what extent: the explosion and the phenomena it revealed are perplexing but also catalyst and material for new cross-world relations and scientific investigation. Epistemological and ontological changes are deeply intertwined and, in their modernist and humanist forms, are deeply shaken.

Quantum Gravity's concern with the imbrications of epistemology and ontology are foregrounded in the introductory pages of the first novel, *Keeping It Real*. The novel's title functions as a joke of sorts, because human conceptions of what is "real" in the narrative have been exploded by post-quantum bomb exposure to realities they never knew existed. For many of the characters, including Lila, what is real and what is possible are now under continual redefinition, and 'keeping it real' is about making the best of things rather than relying on any certain sense of what reality is. As an idiom of popular culture, the phrase also says something about the characters' identities. Here again, the reference is ironic, as so many of the characters subvert social, cultural and

[258] Though more aligned with spirit than matter, aetheric energies are not supernatural or unnatural; rather, they belong to the dimensions of a different alignment of space-time and derive from the space between worlds. A kind of spirit/psyche/matter divide lingers in Robson's work but is also challenged; by the end of the series a character or reader might assert that matter and aether are much the same thing.

bodily norms, and experience identity, subjectivity and embodiment as unstable and mutable conditions.

The title of this first novel's opening chapter plays a similar epistemological-ontological game with words. Headed "Common Knowledge" this prelude to the action establishes the supposed "truth" of the series' fictional reality even while undermining its certainty, highlighting that, in fact, knowledge of reality is unreliable and barely held common at all. The year in which the quantum explosion took place (at a "Superconducting Supercollider" facility in Texas)[259] is now known as the "Lost Year" (*Keeping It Real* 7) and the event is shrouded in mystery and uncertainty. The collider itself vanished "utterly," leaving a "hole in the fabric of spacetime" and the nature of the "quantum catastrophe" that caused the explosion is "unknown" (7). What is known, in a way, is that the universe the humans thought they knew became something else entirely:

> it was not the kind of explosion that blew matter to smithereens and laid waste to worlds. Its actions took place in the near-infinitely tiny spaces between one raw energy flicker and the next. It transmuted fundamental particles into new states, altering the fabric of the universe as if changing cotton into silk. In less time than it takes to blink an eye everything had undergone subtle alteration, though the how and the what of it was a matter which is still debated to this day—a matter not helped by the fact that nobody could remember exactly or say with certainty how things used to be. (7; cf. 59)

As this excerpt from the novel's opening page indicates, it's not just causality (the cause of the event) that is uncertain but the nature of reality; everything has changed but no one is sure precisely how. New realities – in plural as humans soon discover – demand new conceptual frameworks, so that language and theory are now under constant revision in attempts to explain them (8).

[259] A facility much like the one involved in the recent detection of the Higgs' boson: the Large Hadron Collider in Geneva CERN, the European Organization for Nuclear Research (see http://public.web.cern.ch/public/en/lhc/lhc-en.html).

Humans' interactions with elves, demons and faeries only serve to further undermine any notions of "common knowledge" or common reality. The nonhuman peoples populating these other, now "interpenetrating" (8), worlds do not agree with Otopian, human histories of the universe. The elves "strongly dispute the QBomb theory: they claim that they have known of Earth and Otopia since times that predate early human civilisations" (8), as do the demons and the faeries. Nevertheless, their worlds are substantially different from humans' and each other's, not just culturally but materially, to the point where culture and matter are inextricably intertwined. Elves, demons and faeries are aetheric beings, variously "adept" in the use of magics and their worlds are aetheric, magical worlds that don't conform to Otopian understandings of science and all the so-called 'natural' laws it has discovered (for instance, Otopian technology doesn't function well, if at all, in Alfheim (8). Humans, much like their world, are not adept in magic and are very rarely able to detect or understand aetheric energies and forces. Even Lila needs aethereal allies in order to function well when magical issues come into play.

Living in post-Bomb Otopia involves, for most humans, an insistent sometimes violent, and ultimately unsuccessful denial of the immaterial and the changes wrought to their universe (see *Going Under*, Ch 4 & 8).[260] With the help of other races, such as demons, humans are learning some of what they have not previously perceived, such as the "physically real presence of extradimensional regions" coexisting with known space-time (9), but the aetheric races keep many secrets, even from each other, and there is much that they also do not know. None of the other races, aetheric or not, holds universal or fully reliable knowledge of this multi-world universe, and there are non-

[260] As the demons inform Lila, humans are experts in self-deception.

sentient and quasi-material entities living between and in other realms – such as ghosts, elementals, and the intelligence that helped shaped Lila – that no one is able to fully understand or adequately explain.

As mysterious as magic (aether, ghosts, elementals, I-space, and so on) can be, in Quantum Gravity it is meant to be understood as real – "unnatural" to our world, perhaps, but not to the universe. Yet in contrast to the embodied materiality of the supernatural in *True Blood*, Quantum Gravity asserts the reality of magical phenomena by emphasizing the imbrication of the material and the immaterial: immaterial forces can have material effects.[261] Readers learn some of this while travelling with an inter-species team of researchers[262] who have set themselves the task of investigating inter-world spaces, following what is described as "the tides and flow of Akashic space. … Akasha. I-space. The Interstitial. The Void. The Aether" (*Selling Out*, Ch 13).[263] The cracks in the worlds that make inter-realm communication and travel possible are also fault-lines opening onto I-Space (*Selling Out*, Ch 15), the source of the aether (also called Akashic energy), which flows into and through all the realms (though least of all Otopia). Sometimes, taking on substance of a sort, aetheric energy actualizes into the forms and structures of quasi-sentient, quasi-material entities such as ghosts (*Selling Out*, Ch 20). This process, and the relationships between matter, aether and consciousness it points to, are part of what the researchers seek to better understand, immersing themselves in the 'nature' they study, and becoming hybrid themselves in

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[261] Cf. Mitchell's reading of *Natural History*, which finds similar ideas in Robson's earlier novel.
[262] Called Ghost Hunters in a complicated fusion of pseudo and legitimized science.
[263] Interestingly, the word "akasha" invokes Eastern philosophy, religion and science. According to its Wikipedia entry, it is "the Sanskrit word meaning "aether" in both its elemental and metaphysical senses" (http://en.wikipedia.org/wiki/Akasha, accessed August 23, 2012).

the process, changed through the acts and instruments of entangled observation.[264] The immaterial can be very real in this fictional universe; it just comes from and usually manifests in other realities than 'ours' and in the spaces between realities.

Aligned with 'real world' scientists who pursue "a complete theory of the universe" (Best & Kellner 111),[265] the team of Ghost Hunters seems poised to develop their own "theory of everything": in this case, a "full integration" of "the Aetheric Relativity Theories and a science of aether" with "the physical sciences of old Earth" (SO Ch 12). But a comprehensive theory lies perpetually out of reach in an ever-changing, not entirely perceptible universe, even more so because most humans would rather ignore the changes, reverse them, or accept the status quo. Even where characters do seek to understand, their information, perception and understanding is always partial, their scientific explanations almost deliberately muddy, provided in pieces and sometimes secondhand so that readers and characters share in confusion and in speculation. Such gaps in understanding, echoing the instabilities marking the fictional universe, suggest that if there is to be a theory of everything, it can never be more than provisional, an incomplete grasp of what the worlds are all about. And as instability leans toward chaos, uncertainty toward hostility (in physical but also sociopolitical

[264] The researchers' base within the chaos-prone inter-realm is constructed and sustained by intent alone (although it's intent produced by a low level artificial intelligence – *Selling Out*, Ch 10), and they are changed by the energy surrounding them – not physically, but aetherically (Ch 12).

[265] See Best & Kellner: "… many physicists have been obsessed with advancing the modern project of constructing a complete theory of the universe. Such a theory would successfully unify and explain what scientists now believe are the four constituents of nature—gravity, electromagnetism, and the weak and strong nuclear forces—in a 'Theory of Everything' (TOE)" (111).

senses),[266] it's made clear that the stakes entailed here in frameworks of being and knowing are high.

Weird Science

Despite the Quantum Gravity novels' orientation toward the tropes of fantasy fiction, a consideration of the series would be incomplete without consideration of the conceptions of science and reality (and the scientific conundrum) that their collective title invokes: quantum physics, the science by which something might be understood as both a wave and a particle or an object to be so entangled with another that it instantaneously mirrors changes that occur across vast stretches of space, by which we might imagine the existence of multiple worlds. As I write this, the internet is still abuzz with news of the latest advancement in our understanding of the quantum levels of the cosmos: the "discovery" of a new 'fundamental particle' which may be the subatomic entity "predicted" nearly 50 years ago: the "Higgs boson," the particle that "gives all elementary particles mass, allowing for the existence of matter" (Biever).[267] There is a sense, with this announcement, that 'we' are that much closer to knowing all the answers (even if, like the super-intelligent entities and averagely-intelligent characters in Douglas Adams's *Hitchhiker's Guide to the Galaxy*, we haven't yet discovered the

[266] For instance, the withdrawal of elves from Otopia: certain factions of elves, among others, would prefer to do away with the 'multiple worlds' problem, not through denial but by 'repairing' the holes enabling contact between realms, cutting off inter-world contact. This is a major plot point of book one. Human aggression surfaces in book four, with the persecution of fey after a plague of "Mothkin" begin infiltrating Otopian space. Human violence erupts most explicitly in book five, as human hate groups enact an irrational, futile and dangerous attack on otherworldly beings in an effort to eradicate the strange from Otopia. Earlier in the series it is elves that are depicted as the more 'racist' people in their disdain for humans and human technologies.

[267] The Higgs boson "is the fundamental unit, or quantum, of the Higgs field, an all pervading entity that all particles must pass through" (Celeste Biever, http://www.newscientist.com/article/dn22014-celebrations-as-higgs-boson-is-finally-discovered.html, accessed July 4, 2012).

ultimate question). *New Scientist*'s reporter Celeste Biever signals this connotation as she suggests that the Higgs Boson "breakthrough means that the standard model of particle physics, which explains all known particles and the forces that act upon them, is now complete" (Biever). The standard model of particle physics may not explain "life, the universe, and everything" (to again borrow from Adams), but the fanfare around this announcement evokes a kind of confidence that as scientific knowledge and understanding continues to advance, in a Karl Popper-esque path of progression, we will someday know everything about how the universe works.

Yet even within this one article reporting the Higgs boson news, we are reminded of what science does not yet know. Near the end of the report, Biever contradicts her earlier claim of completion to remind us that "the standard model is not complete – it does not contain dark matter or gravity, for a start …" (Biever). "We know…" Biever tells us, yet the contradictions and the gaps in scientific and public knowledge underline a more far-reaching break between information and current understanding, a break that resonates with the illusiveness of the particle itself, which can only be measured (so a more mainstream news source tells us), by "measur[ing] the products of its decay" (CBC News). And as excited as many people – not just particle physicists – are at this announcement, the science behind it remains obscure to the general public. The Higgs boson is also known as the "God particle," [268] and though this

[268] "The Higgs boson has been labeled the "God particle" in the mainstream media because of the fundamental questions it could answer about matter and the creation of the universe, and although most physicists avoid using the term they do agree that the Higgs boson plays a key role in what is known as the Standard Model of physics, which describes the particles from which everything in the universe is made and how they interact" (CBC News, http://www.cbc.ca/mt_ept/stories/2012/07/04/god-particle-likely-discovered.html, accessed July 4, 2012). This naming also functions as a way of making a discourse that may often seem incomprehensibly arcane – particle physics –

nickname may indeed be due to speculation of its origins "during the Big Bang" and of its fundamental relationship to "all matter in the universe" (CBC News), aligning the Higgs boson with "God" is also a sign that particle physics, for most people, is as mysterious as the cosmic power of any supreme creator. The Higgs boson might as well be the stuff of science fiction and particle physics might as well be magic. What we have here is not a crisis of reason, but a crisis of reality.

The Higgs boson is theorized as a "fundamental unit," a "quantum" (Biever) – an elementary part(icle) of the "Quantum World."[269] Measurement and theoretical speculation about quantum particles and phenomena has increased Western/Northern science's understanding of the universe at the micro-level. But quantum physics, the counterintuitive scientific revolution of the twentieth-century, has also caused many physicists (and non-physicists as well, we might imagine) to "experience a 'crisis in reality'" (Herbert qtd. in Best & Kellner 110).[270] The destabilizing effects of quantum

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popularly comprehensible, as well as a way of reconceptualising Judeo-Christian understandings of God (thanks to Susan Fast for this insight).

[269] Biever's coverage of the Higgs boson announcement links to *New Scientist*'s "Quantum World" "topic guide," which offers a "beginner's guide" to quantum physics and a list of recent relevant articles (http://www.newscientist.com/topic/quantum-world, accessed July 5, 2012).

[270] If ideas such as Heisenberg's "Uncertainty Principle," Bell's theorem of "quantum entanglement" or the "Many Worlds Interpretation" of quantum mechanics are perplexing sites of conceptual contention for physicists, the strangeness must be infinitely amplified for any non-scientist who encounters them. "With relativity theory, quantum mechanics, chaos and complexity theory, and superstring theory, science abandons the terra firma of Cartesian clarity for a Wonderland of intricate relations, along with perplexing thought experiments, riddles, paradoxes, and counterintuitive phenomena. Tumbling into the tunnel of bold scientific imagination, one finds curved spacetime, light beams travelling faster than 'the speed of light,' entities acting as both particle and wave, parallel universes, and nonlocal causality and instantaneous changes across the universe" (Best & Kellner 111). The quantum branch of contemporary physics seems, to the popular cultural imagination, like a weird and almost mystical science. So much so, in fact, that popular imaginings of quantum theory (among other complex and near-mystical scientific ideas) get taken up by new age philosophers and metaphysicians as rational scientific support for spiritual claims. For two slightly

theory – entailed by its strange implications and the conflicting interpretations its study has often produced – resonate, to some extent, with the epistemological and ontological challenges posed by poststructuralism and postmodernism, undermining conventional understandings of reality.[271] This is the contemporary condition underlying Karen Barad's development of agential realism as a new epistemological-ontological framework. And this 'crisis in reality' has been literalized for the Otopians in Quantum Gravity in their immediate past. New conditions require ways of knowing that can account for uncertainty, indeterminacy, entanglements and, as Barad's work emphasizes, a breakdown of the classical subject–object divide. Humans can no longer claim knowledge of the world in the classical, objective sense, and if they were once secure in their species' exceptionalism that can no longer be the case. This new reality is not simply postmodern; it's posthuman, and demands a posthuman conception of being and knowing, ontology and epistemology.[272]

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different articulations of this kind of popular spiritual appropriation see *The Secret* (http://thesecret.tv) and *What the Bleep to We Know!?* (http://www.whatthebleep.com/). The relationship between quantum physics and spirituality receives more considered attention and development in the work of Deepak Chopra (see, for example, his recent book co-authored with Leonard Mlodinow called *War of the Worldviews: Where Science and Spirituality Meet – And Do Not*). Karen Barad suggests that "[i]n the popular literature quantum physics is often positioned as the scientific path leading out of the West to the metaphysical garden of Eastern mysticism" (166).
However, popular entanglements of quantum physics and spirituality may represent an effort to engage seriously with the way in which both science and religion offer, if often in different contexts, authoritative worldviews, and with the very reasonable appeal of alternative metaphysics.

[271] See Best & Kellner, who discussed the relationship between quantum physics and modern and postmodern scientific paradigms (103, cf. 41).

[272] Compared to the mechanistic explanations of the world offered by Newtonian physics, quantum theory can come to seem like a worldview echoing with promises of collective salvation – enchanting and enchanted. But as Barad reminds us, we should not quickly forget that "quantum physics underlies the workings of the A-bomb, that particle physics (which relies on quantum theory) is the ultimate manifestation of the tendency towards scientific reductionism, and that quantum theory in all its

Posthumanist Realities

From Quantum Gravity book two (*Selling Out*):

> "Perception is an act of creation," Madame said. … "And creation happens in the fall of the instant. It is unpredictable. Unknowable before it takes place. … My talent only allows me to see what is, and some of what has been. But the truth of what is . . . appears differently to all who perceive it. I get close to its fundamental reality, but even my gaze is coloured and focused by what I am—an imperfect being in a perfected universe." (Ch 11)

Madame des Loupes (the character who speaks in this passage) is a partly crow-shaped, partly human-shaped demon – a clairvoyant,[273] not only in the sense that she can see into the minds of others but also in the sense of "clear vision" more generally, one who sees reality through a tempered, constructivist realism, or perhaps a form of realist relativism, that acknowledges the worlds as real as well as constructed (and though emphasizing the individual here, Madame has remarked upon the social dimensions of knowledge as well).[274] Implicit in her reflections are questions about boundaries: between perception and creation, reality and imagination, knower and knowing, individual and world… Robson's series often lingers over such issues of boundaries (their formation and their breakdown) as well as changes of state, the transformation of energy and substance from one condition or form to another, and perhaps the possibility of being both at once.

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applications continues to be the purview of a small group of primarily Western-trained males" (166).

[273] In Demonia, a highly advanced civilization with no technology, where "magic and materials science" can be joyfully practiced in combination, a powerful clairvoyant – and former leader – is not a marginal psychic but a natural philosopher, in fact, a kind of scientist (Ch 10).

[274] Interesting too, that she chooses to speak of the universe's perfection in the past tense, as if what had been a work in progress is now a done deal, or perhaps that her particular view of that moment may be situated differently in a matrix of relative space and time. Madame's theories might be productively compared to those of the fictional human "quantum consciousness theorist," Paxendale, who ultimately suggests that the non-human realms were created by the quantum bomb and the "direct interaction between matter and consciousness" it caused (*Going Under*, Ch 8)

Knowing, in Quantum Gravity, is often about perception, and understanding how knowing and perception are situated by physical and social, material and cultural, bodies and locations and the entanglements of knower and world – a different conceptualization of knowledge forced by the changed conditions of reality, a different kind of realism.

"*Agential realism entails the interrogation of boundaries*," writes Barad (1996, 182, original emphasis), and the recognition that 'objects' aren't pre-existing things but *boundary projects* (181). In Quantum Gravity numerous encounters (cross-racial, cross-species) foreground the series' interweaving of knowledge, perception, situatedness and entanglement, and the ongoing construction of entities as boundary projects – posthuman epistemological and ontological concerns. I offer here one example in particular: an encounter between Lila and an elf assassin that takes place in Demonia and is mediated by the aethereal elf to which Lila, at this point, plays host. Lila outlines a long list of things she doesn't fully know or understand: magic and aether, demon customs, elf cultural politics (85), racial differences, competing histories, and the physical temporal existence of Thanotopia, the realm of the dead (86). Lila's knowledge, she confesses, is constrained by her own cultural and linguistic experience and by her part human/part machine embodiment through which she has "no ability with magic," and thus she misses most of what goes on in Demonia and what those goings on mean because Demonia is such a magical realm (85). Lila knows things about demons, and elves and faeries, but the constraints of her cyborg body and Otopian culture mean she doesn't "get" these others or their worlds (85-86). In some respects she "can't even imagine" how this multi-world reality can possibly work or exist (86).

Yet Lila's perceptions are shaped here and in some ways enhanced by her location, locatedness and awareness of her own limitations. In Demonia she is able to see clearly the aetheric body of the elf who has just tried to kill her (84); her entanglements with other beings, such as the elf she hosts, enable her to know what she could not on her own; and the strangeness of the phenomena she encounters in places like Alfheim and Demonia demand that she be more open to seeing things differently. She learns that just because things aren't what they seem doesn't mean that the seeming is wrong, just misapprehended. Some times this is too much for her – "I'm sick of the whole business," she says (85), and she wants to go home. But there is no home where things will make complete sense, and Lila feels this through machine parts and flesh, electrons and dreams.[275] For Lila posthuman (agential) reality manifests in her contingent experience of situated knowledge – moving between worlds, through her hybrid embodiment and her entanglements with others – and sometimes she sees this as a problem that can't be "fixed" (87). Yet she also keeps trying to move forward, and believes she "can do what [she has] to do in this job" *because* of her hybrid condition.[276] Lila persists with her mission for, as she herself says, "there is no way but on" (86). She can only know about the worlds and the entities in them partially but because of partial and situated knowledges she also can't be entirely known or overcome. It's not a perfect situation, but it's good enough to keep going with. And, as much as she demonstrates the ostensibly human trait of self-delusion, Lila and her fellow posthumans know that

[275] Home remains elusive for Lila until she's beyond attempts at understanding. In one scene in book five, she sits in her family home, empty of long-dead parents and occupied only by a 'returned' and undead older sister, and cries again that she wants to go home. At the end of the series home is exactly where we find her, but one where the complex and perplexing contradictions of the present are simply there rather than problems to solve.

[276] In book five we learn this is also the position of her 'makers', that Lila's hybridity is a desired condition.

perfect isn't 'real' anyway. In Quantum Gravity, situated knowledges are the only knowledges you can count on, even if that's just for a while.

The narrative of the Quantum Gravity series destabilizes to some extent not just ontological categories but also epistemologies, challenging humanist claims to sole, universally authoritative knowledge. More than a postmodern suspicion of metanarratives or a completely nihilistic rejection of truth, shifting humans from the knowledge centre of the universe, in Robson's novels, works as a posthuman assertion that knowledge is situated and partial. The absence of fixity and certainty continues to produce anxiety in this fiction, but there is an impetus to get on with things anyway, adapting and communicating as best we can. And that is what the main characters in the novels generally try to do. The narrative here is less a philosophical question about subjectivity or un/certainty and more an exploration of actions, interactions, and relationships amidst the complexities of posthumanist realities.

Inside the universe, within phenomena, part of nature: this is Barad's *agential reality*, the basis of a kind of constructivist objectivity,[277] and the grounds of possibility for a posthumanist theory of quantum gravity. This is the conception of reality Robson's series requires. Barad's notion of agential realism has 'real world' ethical implications, and she is among those who remind us that "ethical concerns" are not just "integral" "to the practice of science" but she also attempts to show "how *values are integral to the nature of knowing and being*" (*Meeting the Universe* 37, original emphasis). In the Quantum Gravity series, scientific frameworks, and conceptions of epistemology and ontology, have serious implications as well, affecting how different species treat each

[277] Barad is a (too) harsh critic of "relativism"; she insists that agential realism is a realist, even naturalist, and not relativist position, but also a constructivist one as well, describing the only kind of objectivity that is actually possible. Cf. Barbara Herrnstein Smith (18-23).

other, how they handle communication and interaction, and how they envision solutions to the instabilities unsettling their worlds. If the conditions I describe sound, in some ways, much like issues people face in a globalized 21st-century environment, I don't think it's accidental. Robson somewhat disingenuously claims no pedagogical intent for her novels, but the resonant possibilities of the multiverse I've just described are hard to ignore or resist. Intentional or not, the series apprehends much of the complexity and confusion characterizing the global contemporary: hybrid identities and subjectivities; post-nation-state sociopolitics; unstable geographies; migration of goods, information and people; changes happening too rapidly to assimilate; the collision of multiple seemingly incommensurable worldviews… in many ways a posthuman and posthumanist environment.

This sociopolitical matrix is background dressing in the Quantum Gravity series but crucial to the story and tangled up in the need for new ways of understanding identity and difference, knowledge and practice. And sociopolitics are entangled with the paradigms of science and scientific knowing. "Quantum Gravity," then, functions as a title, a scientific concept and a metaphor for understanding that is required but not yet at hand. Viewed from this angle, the series' invocation of quantum physics becomes an apprehension of demand, marking the need for frameworks and theories attuned (to once again quote Barad) to "the world[s'] ongoing intra-activity, its dynamic and contingent differentiation into specific relationalities," encompassing the "differential becoming[s]" of particles, universes and everything in between.[278] In this sense, Quantum Gravity seems to be in some sympathy with the work of Barad. Reading this resonance as a locus of productive possibility, my analysis here considers the series'

[278] See Barad, *Meeting the Universe* 353.

representation of 'quantum reality' to be a kind of scientific, conceptual, and experiential paradigm, a framework demanded by the conditions of posthuman worlds. The changes wrought to human and nonhuman existence in Robson's narrative are ontological as well as epistemological and the conditions the characters face challenge not just conceptions of human modernity but of human embodiment and knowledge all together. The Quantum Gravity novels play with alternative ways of conceptualizing boundaries and interactions, seemingly calling for a reimagining of difference and intersectionality, and perhaps even a change in the nature of thought itself.

Moving toward a Conclusion

In the twentieth-century, so the common story goes, Western/Northern scientists imagined that they were close to solving all the mysteries of the universe. There were few great puzzles left and those looked to be near solution. Bound up with the crises of reason, critique, and the "Modern Constitution," the crisis in reality inspired by quantum physics is implicated in the boundary instability of the emerging posthumanist contemporary. This is a reality crisis informing and sometimes apprehended, if not necessarily recognized, in Western/Northern popular speculative fiction.

Worldviews, science-fictional and otherwise, are bound up with questions about knowledge, with epistemological concerns, but the primary frames by which we make sense of the world are also inevitably ontological, informing what the world can be for us, as Karen Barad's work underlines. These issues, as I have previously discussed, are not just about fictional, narrative framings but are implicated in the claims critics and scientists, among others, make about reality. Fantasy fictions make reality claims different from those of science fiction, yet when imagined fantasy worlds intermingle

with our contemporary science-fictional reality, or what that reality might become, the resulting frameshift may offer an important means of apprehending reality otherwise.

CONCLUSION: Science-Fictional Speculation, World-making Framings, and Cultural Imaginings

Posthumanism, (Ir)rationality and Science Fiction

Posthumanism is not a conventionally rational condition. The relationship between knowledges designated as rational, as modern, as fully human and knowings that are not is crucially bound up with issues of power, legitimacy and authority in Western/Northern cultures, shaping our understanding of the world around us, our place in it, and our pursuit of new insights. However, the systems and structures in which we live, move and coexist – global technoscientific capitalism chief among them – are not reasonable and, unsurprisingly, often produce "unreasonable" responses, from the Occupy movement with its apparent lack of a logical motivating focus, to the vast popularity of films and books like *The Secret* which promise financial success by way of the mystical (if framed as scientific) powers of attraction and positive thinking. While the logic of technoscientific rationalization drives research agendas and developmental narratives, still positioning advanced technoscience at the ever-increasing heights of human achievement, the quasi-mystical irrationality of Western/Northern technoscientific modernity must compete with other frameworks of understanding as we try to make sense of the world.

Where the explanatory power of technoscience fails in the everyday, spirituality (including religion) and tradition (even knowledges and practices labelled magic or superstition) may step in to fill the gaps[279] – clearly science has not silenced all

[279] Vivian Sobchack makes an observation along these lines in the introduction to her book-length discussion of science fiction cinema. Sobchack notes that Polish/British anthropologist Bronislaw Malinowski, in his field studies of "primitive" cultures, determined that magic, religion and science interact in societies, their explanatory powers competing for social dominance, each stepping in where the others leave unexplained gaps (see Sobchack 62-63). As Western culture becomes increasingly high-

alternate voices. And certainly the diasporic migrations and multiculturalism of contemporary nation-states bring Western/Northern explanatory frameworks into contact with alternative ways of knowing, which persist even as the West/North consigns them to the categories of tradition, even superstition. In this contemporary context, commitments to the magical, religious, spiritual, indigenous, and so on,[280] persist not simply as reminders or artefacts of the past but as markers of the present and visions of the future, co-mingling with the worldviews and self-understanding promoted by Western/Northern technoscientific development. Efforts to negotiate and reconcile what we know, believe, imagine and feel sometimes play out most explicitly in our speculative fiction, revealing some of the ways in which we are attempting this patchwork Frankensteinian task and sometimes suggest (not always wisely) how we should.[281]

As Vivian Sobchack has argued, science fiction's emphasis on science and technology does not equate with an erasure of "transcendentalist" elements of magic and religion from the genre – at least in its cinematic texts (Sobchack 63), although I would say this is true in examples across media. Even in its founding literary moments science fiction was entangled with fantasy and the Gothic in its efforts to explain the

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tech and scientific discoveries threaten to demystify life itself, one might expect that magic and religion would give way to science and technology in these struggles for the authoritative upper hand. Yet interaction between scientific, magical and religious explanation remains at play in technologically-advanced societies, and in genre fiction, Sobchack suggests (Sobchack 63).

[280] This list is not meant to suggest these are synonymous terms or fields but to recognize the way in which each of these kinds of knowledge and practice are commonly set in opposition to 'modern' reason.

[281] I thank my supervisor, Anne Savage, for this image, which resonates not only with the mixedness of a living being-turned-monster patched together from the remains of several dead individuals, but also "Patchwork Girl," Shelley Jackson's gender-bending hypertext reimagining of Mary Shelley's proto-sf tale, as well as the notion of "Frankenstein foods" and anxieties about the mingling of nature and technoscience.

unknown. Genre policing for technoscientific purity in sf is persistently problematized by the ways in which many speculative fictions deliberately confuse the distinctions between the technoscientific and the magical or miraculous. Such works often retain science fiction's fascination with the developments and potential of technoscience while exploring elements of horror and fantasy to address phenomena, possibilities, anxieties and cultural 'realities' that Western/Northern science has rejected or, alone, cannot address or explain. Within this large and hybrid generic framing I would include the fantastical science fictions and science-fictional fantasies I have analyzed. Texts across various media unfold as imaginings of a world (or, in some cases, a universe, or multiverse) where the rational and the non-rational co-exist; many of them are extraordinarily popular. There may be many possible explanations for the popularity of such narratives. The one I suggest here is that these stories resonate with experiential reality, apprehending some of the significant posthumanist ir/rationalities of contemporary Northern/Western existence; we may not encounter psionic powers, vampires, elves, cyborg warriors and multiple realities in the everyday, but sometimes it feels as though we might, or might as well.

World Framings and Multiple Worlds (in which I live)

As I write this thesis, I work within and respond to the dynamics of life in North America – in academia (in the Humanities, but with my eyes turned toward the technological and the scientific), and in the public and popular spheres of experiential and imaginative existence: the virtual and literal space-times where ideas and cultural productions are shared and circulate. Such space-times in (and reaching far beyond) North America provide a geographical and geopolitical focus

for my thesis for a number of reasons.[282] This continent is where I live and my research is concerned with and responds to the environment in which I find myself.[283] While I aim for critical distance, I am immersed in the milieus, discourses and world-framings around me. I have chosen to study the culture and society in which I live because this is the society I am best equipped to understand, if also best positioned to take for granted. I take seriously Bruno Latour's call in *We Have Never Been Modern* for a comparative anthropology that allows us to turn a critical gaze upon ourselves (in the so-called "modern" world), rather than on the holistic lifeworlds of exotic others, so that we can simultaneously attend to and seek out the naturalized, socialized and discursive dimensions of the collectives in which we exist (*Modern* 5-8, 91-94).[284] The affective resonance of the tensions I am trying to tap into straddles all three of these domains and demands an element of auto-ethnography – a forthright self-disclosure acknowledging that I experience and feel as well as observe and analyze, and that I read technoscientific tales as a fan as well as a critic. Situating myself within this project, or perhaps building it around and

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[282] In a sense, this is also a temporal focal point, tapping into, for example, heightened anxieties about Western/Northern rational authority, scientific and otherwise, post-9/11. The twenty-first century is also characterized, so far, by technological changes in how people consume and engage with media and narrative, which means that the circulation and reception of science-fictional stories is also changing and doesn't work in quite the same way as it has in the past. I would like to engage more with these changes, but this is another project and will, for the time being, have to wait.

[283] Including but not primarily focused on Canada. American cultural production dominates Canadian mass media, and the fictional texts I engage with are set in and mostly emerge from the United States, with ties to Canada and the UK. However, my situatedness in Canada must colour my interpretations of these imaginative versions of America with which I engage.

[284] Even if Latour was not the first to articulate this challenge, or fails to acknowledge the feminist theorists who have called for just such analysis of our own cultures and lifeworlds.

from the locus of my own situatedness, I also keep in mind the concept of immanent critique, immanent because, as Nicole Shukin points out, the circulation of signs (such as representations of animals, or, in the case of my project, representations of technoscience) always occurs within fields of power. There is no position within these fields that affords us a "transparent" or "straight" view of such signs and no outside where the "truth" can be seen or from which it can be revealed.[285]

The North America I deal with in this thesis is a literal place, a political abstraction and an imagined space-time, but also a social entity, in fact, a constellation of overlapping social collectives that exist within and extend beyond geographical and political borders. I belong to some of these collectives and not others and there are still more of which I am not even aware. My own overlapping web of belongings, never reliably static, includes markers of identity and subjectivity, nation and ethnicity, experience and taste, and so on. My collectives include family and friends, scholars and fans, most of whom are what we would call human, though some of my companions are more commonly recognized as animal (cat) and machine (with antecedents reaching, along so-often exploitative lines, across the globe). And I have spent much time immersed in the imaginative worlds of science fiction and fantasy. The North America I inhabit, literal and abstract, is also implicated in a web of localized and globe-spanning cultural interactions, which I and my spatial neighbours, by extension, are part of as well.

This continent is made up of imagined nations, in the Benedict Anderson sense, but of other imagined communities as well, some face-to-face and others not.

[285] See Shukin's discussion of the importance of "immanent critique" in her own work (27).

North America exists and transforms in the midst of a global space of circulating imaginative, material, political and cultural flows, where the differences between these entities aren't that easy to see or identify. The multi-dimensional space-time that these flows create is "irregular" and its horizons change depending on where one looks, and from where (Appadurai 33). Characterized by disjunctures, our heterogeneous planetary culture is shaped by flows of media (mediascapes), people (ethnoscapes), technologies (technoscapes), money (financescapes) and ideas (ideoscapes), forming a complex and often contradictory structure (33). Arjun Appadurai appropriately conceptualizes this terrain in a plural and conceptual sense as "imagined worlds" (33).[286] *Imagined worlds* are, he writes, "the multiple worlds that are constituted by the historically situated imaginations of persons and groups spread around the globe," and while some imagined worlds are official constructions, they are also subject to subversion and unofficial manipulation: "many persons on the globe live in such imagined worlds (and not just in imagined communities) and thus are able to contest and sometimes even subvert the imagined worlds of the official mind and of the entrepreneurial mentality that surround them" (33). The locus of the individual agent, Appadurai contends, is where (and when) multiple material and imagined worlds intersect. We live in multiple worlds, multiple overlapping framings. These multiple worlds make it possible for us to perceive and to understand, producing and intersecting with the

[286] When Appadurai refers to "imagined worlds" he is, of course, building on Benedict Anderson's concept of imagined communities combined with Frankfurt school analyses of mechanically-produced images and the French idea of the imaginary or *imaginaire* (49).

perceptual frameworks through which we make sense of concepts like *science* and *fiction*, and the distinctions (or not) between them.

The ways in which I see, understand, and interact with the (rest of the) world are shaped by the culturally-specific (if inextricably hybridized) frameworks and framings in which I find myself (my habitus, perhaps, if I were to imagine this play of agency, structure and power in the terms of Pierre Bourdieu). And each of the multiple worlds we all cohabit in variously intersecting ways has its own set of overlapping frames, many of them shared. Following Bourdieu and Appadurai both, I would argue that although the multiple worlds we exist in are not within our control they are not entirely out of it either, and the imaginations of the individual as well as of the collective play important social roles. My imagined worlds, the collectives into which I was born and in which I/we live, and the cultural scapes with which I/we engage, are in some cases determined and in other cases a matter of choice. They are constitutive and constraining but not entirely deterministic. They are also the experiential and imaginative structures by which we can *re*-imagine and *re*-frame the world.

"Conditions of possibility" (Jameson) are also "conditions of reproduction and reproducibility" (Butler 9). Frames, as Judith Butler asserts, break out and break from both their contexts and from themselves; in this sense, framing "becomes a kind of perpetual breakage, subject to a temporal logic by which it moves from place to place" (10) and which "constitutes the possibility and trajectory of its affect as well" (11). Thus we want new frames (and/in alternative media, for example) to contest the framings that support hegemonic discourses, but that is not all. We also need to look at how

frames breaking with themselves calls into question "a taken-for-granted reality," "exposing the orchestrating designs of the authority who sought to control the frame" (12). This means "working with received renditions of reality to show how they can and do break with themselves" (12). The framings of hegemonic representation need to circulate in order to negotiate their hegemonic power; but that circulation necessarily entails breaking from context, from previous frames, enabling different "possibilities of apprehension" – of boundaries, insides and outsides (12). If genres are frames, or framings, then the production and circulation of generic texts becomes a process of reiterating and a perpetual breaking from/of genre frames, genre worlds. Thus, according to this logic, the instabilities and hybridities of generic categories marks the incompleteness, the breakage of (re)framings, renegotiating the possibilities of inside and outside, recognition and apprehension – the possibility of framing differently. There are many implications in and to the frame breakings and reframings enabled by speculative fiction. A key one is, as I have insisted repeatedly throughout this thesis, a reimagining of "modern," "human" and "science" – and thereby, the world that science (science*s*) can help us describe.

The capacity of speculative fictions for destabilizing Western/Northern, phallogocentric and universalist narratives of science suggests that science fiction and fantasy can, in some cases, participate in and contribute to an imaginative rethinking of these categories and their inevitability. Deconstructing, expanding and re-envisaging scientific knowledge and ways of knowing through narrative and genre, such work can contribute to loosening the triumphalist and exceptionalist modern/masculine grip on

what counts as science, or at least reveal some of the chinks in the armor.[287] A growing body of critical work now demonstrates that this can be the case for feminist and postcolonialist science fiction. However, popular fictions of the North/West that are not explicitly feminist or postcolonial can also apprehend some of the problems with existing institutional authority, including that of 'science', the 'human' and, relatedly, 'science fiction'. Such fictions have an important role to play in our cultural capacity for imagining the world otherwise, reaching out and responding to a large and relevant public, if one that is perhaps less aware of and less oriented toward intellectual/critical discourses and agendas. Thus popular as well as intellectual science-fictional stories (broadly conceived) have a potentially significant role to play – not just in pluralizing modernity and science but in mediating broader discourses about science, mediating between the sciences and the disciplines and arenas (such as the 'Arts' and the 'Humanities') that remain 'other' to science.

My thesis represents one kind of critical intervention in this area – an attempt to make sense of popular, mainstream and in some ways very feminine speculative fiction (female leads, romantic plots and subplots, emphasis on the power of emotion). There are many more popular media texts in this vein that have not yet been read by way of the particular posthumanist science-fictional framing I engage with here. There are also numerous other ways in which such texts can be approached without necessarily losing sight of their relation to discursive and imaginative framings of technoscientific or rational authority. It would be possible and productive to focus more on the media-specific differences between print fiction, television and cinematic science-fictional narrative, especially with series (such as the Sookie Stackhouse stories, or potentially,

[287] In this context, Sarah LeFanu's study *In the Chinks of the World Machine: Feminism and Science Fiction* comes to mind.

the Hollows) that have been adapted from one medium to another. Examining the transmedia circulation of these works or fans' reception and responses could also lead to some important insights. Author Kim Harrison, for example, is an active user of social media and frequent guest at fan conventions, and approaching her work from these avenues would offer different framings of their engagement with the popular and public imagination. It could also be illuminating to investigate the global circulation and reception of these kinds of texts, tracking for instance the popularity of specific titles in translation. And although space and time didn't allow for it in this project, I would like to bring the engagement with myth and magic in these narratives into more direct and elucidating conversation with the explicitly critical speculative storytelling of indigenous, "Third World" and other "minority" authors and the growing body of criticism on such work. In addition to all these other potential lines of investigation, it would also be possible to turn one's critical gaze on the politics and economics of technocapitalist production in which these stories see the light of day, or to approach their significance by way of other bodies of critical and cultural theory, particular work on the cultural and individual imagination.

Imagination and Social Change

Our worlds are complex, difficult to understand or explain, resistant to reliable prediction. Collectively, we inhabit one planet, but the environments we live in vary and intersect along multiple axes: geological, geographical, social, cultural, political, cognitive, cosmological and so on (the potential length of this list is one among many indications of how complex, even confused, collective co-existence can be). Complexity (and chaos) thus seem like useful models and metaphors not just in technology and science (think complexity theory or chaos theory) but also in social and cultural theory,

sometimes in an imaginative effort to illuminate the workings of contemporary society and culture (societies and cultures) via the frameworks of scientific understanding. Appadurai offers a particularly poignant example in *Modernity At Large* (1996) when he calls for a human chaos theory for analyzing the contemporary intercommunicative environment – a "fractal metaphor" that can capture the "complex, overlapping, fractal shapes" and uncertain dynamics of contemporary cultures "with a polythetic account of their overlaps and resemblances" (as in set theory mathematics, or in polythetic biological classification) (60-62).[288] We need non-essentializing accounts of common or shared characteristics and intersections between cultures and parts of cultures, this suggests, to help us to understand the contemporary global environment as a multidimensional space-time of fluid, irregular, perspectival "imagined worlds" (50-51).[289] At best, this kind of approach is not an effort to explain sociocultural phenomena as manifestations of scientific "truths" but to use imaginative representations as a tool for conceptualizing the experiences of sociocultural reality. In cultural theory, as in science, metaphors are necessary explanatory devices; as with science, in cultural theory it is important to remember that metaphoric imaginings exert material power.[290]

Imagination, here, is key, as the phrase "*imagined* worlds" should suggest (emphasis added) – imagined not in the sense of 'not real,' but to indicate the

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[288] Set theory mathematics addresses issues of "set" membership, relationships and intersections. Polythetic classifications also address group membership, as determined by resemblances and shared traits rather than essential characteristics.
[289] Compare this with, for example, Steven Best and Douglas Kellner's call for "a multidimensional optic on the trajectory of the postmodern adventure that combines historical narrative, critical social theory, and cultural mappings" (*PA*, 13).
[290] This idea emerged as a recurring issue throughout the 24-four episodes of CBC radio's "How to Think About Science" series. Several guest scholars involved in the study of science and technology (such as Evelyn Fox Keller and Richard Lewontin, for example) discussed the power of metaphor in the construction of scientific knowledge and the practices of science.

inextricability of mind and matter or, in Donna Haraway's terms, the material and the semiotic.[291] The phrase *imagined worlds*, for Appadurai, is a way of registering that "the imagination has become an organized field of social practices"; it "is now central to all forms of agency, is itself a social fact, and is the key component of the new global order…" Imagination, then, and the process of imagining, are not about individual minds but collective world building and understanding, working and negotiating between sites of agency and "globally defined fields of possibility" (49-54). Imagination, shared imagining, is not simply a matter of investigation (an object of study), but a dimension of critical practice – as I have asserted by way of Bruno Latour, Andrew Pickering, Elaine Graham, and Donna Haraway, among others, throughout this thesis.

The realm of imagination and possibility is highly contested terrain, increasingly so as Western/Northern technoscientific "progress" and globalized capitalism facilitate and force escalatingly rapid change. As transnational capitalist economics and the exploitative logic of technological rationalism have come to be seen, increasingly, as an all-encompassing system, we find it ever harder to imagine ourselves outside that system, to envisage and envision alternative ways of interacting with each other and with other entities in our technological-natural worlds. From one angle, the limitations of capitalist logic and imagination surfaces in issues of social and material inequality. Decades after sociologist Henri Lefebvre wrote that "*life is lagging behind what is possible*" (230, original emphasis), we still face a substantial gap between what 'rational human progress' has achieved and what it might if our accomplishments and

[291] "I learned early that the imaginary and the real figure each other in concrete fact, and so I take the actual and the figural seriously as constitutive of lived material-semiotic worlds" (Haraway, *Modest_Witness* 2).

innovations were distributed more justly. And, as large social collectives, we have difficulty imagining things otherwise.

For many critics, capitalism remains the overwhelming spectre limiting the cultural imagination and impeding radical progressive politics. Lefebvre, writing in late 1940s France, argued that capitalism's alienation of power from the people had already had the effect of making the society we have seem like the only one we could ever have (231-233). Not entirely pessimistic, Lefebvre saw hope in Marxist dialectical materialism and the critique of everyday life – a program for enabling people to imagine progress and possibility, not just in terms of quantitative development, but in terms of a qualitatively better form of everyday life (246). However, that was more than seventy years ago, and capitalism still seems to be keeping equitable development and social justice – and our ability to imagine ourselves there – in check. As Wendy Brown argues in *Edgework*:

> It is this capacity to develop and sustain a critique and a vision of the alternatives that contemporary capitalism undermines so effectively with its monopoly on the Real *and* the imaginable, with the penetration of its values into every crevice of social and subjective existence, and with its capacity to discursively erase if not concretely eliminate alternative perspectives and practices. Without another conscious vantage point from which to perceive, criticize, and counter present arrangements, a vantage point Herbert Marcuse argued largely vanished in postwar capitalism, it is almost impossible to sustain a radical vision as realistic or as livable. And it is almost impossible to fight for something not on the liberal and capitalist agenda, a fight largely incompatible with seeking freedom *from* that agenda. (107)

In the twenty-first century, our critical cultural imaginations still seem alienated, stunted.

For some members of the Frankfurt School it wasn't simply capitalism as an economic system that incapacitated radical imagining but the logic of rationalization underlying capitalism. In *One-Dimensional Man* (1964), Herbert Marcuse identifies

"technological Reason" as the logic of domination that limits the possibilities of radical human thought (144). Within this system where judgement is perpetually subjected to the technical criteria of operationalism, Marcuse argues, the possibilities and alternatives imaginable through technological and scientific development become inherently exploitative, driven by the increasingly efficient application of rationality to the enslavement of nature and man (144). Martin Heidegger's conception of technology (in "The Question Concerning Technology") particularly resonates in Marcuse's analysis,[292] which builds on Heidegger's argument that the distinctness of modern technology is in the 'use' relationship it sets up with nature, ordering, enframing and 'challenging-forth' the natural world (Heidegger 320-324) – thus shutting down possibilities, especially in comparison to the more open revealing carried out by the 'bringing-forth' of art (333-339). This enframing/revealing 'orders' technology from its inception, as neutral tool, 'apparatus' or product while occluding other possibilities and implications; this relationship to technology (and by extension, the nature it is used to manipulate) fuels our fears of being reduced to mere 'standing-reserve' ourselves (331-332).[293]

Recent scholarship has offered similar, if more ambivalent, arguments about the relationship between capitalism, nature and technology (and capitalism's use and manipulation of nature through "neutral" technological tools) in terms of "the operationalization of nature" (Paul Rabinow) or of "nature enterprised-up" (Marilyn

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[292] As Jurgen Habermas notes, Marcuse's work was informed by several philosophical examinations of science, technology, and rationality, including the work of Heidegger, Edmund Husserl, and Ernst Bloch; however, Marcuse's study is the first to develop a theory of advanced capitalism beginning with the analysis of technical reason, suggests Habermas (84-85).

[293] Thanks to Anne Savage for helping me work through this particular reading of Heidegger.

Strathern) (Haraway, *Modest_Witness* 102). Donna Haraway, in particular (and influentially) has moved deliberately beyond Heidegger's notion of technicity as an emptying and 'resourcing' of the world to see in technoscience a more hopeful possibility as well – because technoscientific practices are "lively, unfixed, and unfixing" they may result in good surprises (see 279-281, note 1). But even Marcuse's dystopian view of the world includes an implied chink in the exploitative systems of technorationality, a suggestion that *speculative* thinking may support a kind of resistant potential.[294] And speculative, imaginative work continues to be a significant part of contemporary cultural and social theory in pursuit of progressive change.[295] Critical speculative thinking – in all its theoretical-fictional-factual and other imaginative and material permutations – is an important and necessary element and practice for the ongoing reconceptualization, reframing, of knowing and being/becoming as we seek to collectively survive and flourish.

Haraway has frequently turned to science fiction and the science fictional imagination in her efforts to think toward a more responsible engagement in and with the world, using figures such as the cyborg (*Simians*), the FemaleMan© (adapted from

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[294] Marcuse characterizes society as an anticipating entity, making choices between alternatives, realizing some projects while rejecting others until a particular project "has become operative in the basic institutions and relations, [when] it tends to become exclusive and to determine the development of a society as a whole" (xlviii). But the dominant technological system of our world is "hypothetical," he argues, in the sense that it depends on a "validating and verifying subject" (168), which may imply an opening within this process for progressive intervention. Although Marcuse contends that all modes of logic (classical formal, modern symbolic, dialectical) develop "within the historical continuum of domination," they do not always produce conformist and ideological "positive" thought, he allows, acknowledging that the same modes can enable speculative and utopian "negative" thinking as well (167-168).

[295] See, for example, Brown's reframing of the contemporary loss of "revolutionary possibility" in optimistic, imaginative terms (115), or Steven Best and Douglas Kellner, for whom the imaginative work of theories, narratives and mappings necessarily combine in constant renegotiation – revealing, when successful, the contingency of the present and possible "visions of alternative futures" (15).

Joanna Russ) or OncoMouse™ (*Modest_Witness*) to illuminate the processes and material-semiotic realities of contemporary life in technoscientific capitalist societies. "Figures help me grapple inside the flesh of mortal world-making entanglements I call contact zones," she writes (*When Species Meet* 4):

> For many years I have written from the belly of powerful figures such as cyborgs, monkeys and apes, oncomice, and, more recently, dogs. In every case, the figures are at the same time creatures of imagined possibility and creatures of fierce and ordinary reality; the dimensions tangle and require response. (4)

Here, speculative imagination calls on the tropes of fiction and science as well as the grounded materialities of the everyday in the pursuit of more ethical engagements and understandings. These figures also mark the relationship between the material and the imaginative, and the significance of science-fictional imaginative work not just for making sense of the world but for our efforts in changing reality for the better.

Concluding Thoughts

We find ourselves, here in what we call the twenty-first century, in a world where the solid boundaries of Western/Northern modernity are chronically leaky. That solidity may have always been illusory and probably was, but the illusion has become increasingly more difficult to sustain. Race has proven to be a conceptual rather than genetic construct. Gender and sexuality resist reduction to biological determination. National borders, some only recently drawn, give way, sometimes, to migration of products, peoples, information and transnational alliances. Our bodies change through medical and technological interventions (on top of the changes wrought simply by living and the passage of time). Animals are found to exhibit traits and capacities thought to be exclusive to the human. And Western Enlightenment comes up against other beliefs

and ways of knowing that prove resilient in the face of humanistic 'reason' and 'understanding.'

We often persist in shoring up familiar and comfortable divides. Our binaries and dualisms still seem appealing, soothing our categorizing brains and helping us tone down multiplicity to manageable, understandable proportions. However, the resulting polarities, linearities and categorizations offer only provisional (and often temporary) clarity amidst the confusion. Worse, our reactions against instability can further entrench exploitative and oppressive conceptualizations of difference, hierarchizing knowings and beings (for example) so that 'our' way is reassuringly situated on top. Amidst the messy ontologies and epistemologies of the current moment, temporary, provisional clarity is a valuable thing, but only so far as it is recognized as such.

Rather than striving for complete revolutions that set us up for failure and contribute to "postmodern despair" (Latour 126), we might, instead, strive to lever the possibilities in what we already have to work with, speculating with and beyond the now – by way of critical and cultural theory, speculative fiction, and the imbrication of the worlds and framings they imagine. Negotiating the fleetingly but provisionally effective boundaries and binaries that help us make sense of complexity while irreverently transgressing reductive classifications, we might challenge ourselves to work amidst contradiction and to imagine something beyond what we can currently comprehend.[296] More multi-faceted than a mere balancing act, such conceptual and practical work would demand a great deal from our imaginations, individual and

[296] As Susan Fast put it to me in one of our several discussions, "holding contradictions" is an important task for cultural theorists. I was also inspired here by Donna Haraway's definition (and embrace) of *irony* as being "about contradictions that do not resolve into larger wholes, even dialectically, about the tension of holding incompatible things together because both or all are necessary and true" (*Simians* 149).

collective, but it may also provide some of the mental exercise necessary to bringing us closer to ethical co-existence.

The kind of conceptual work I'm imagining here is, to some extent, already in process, involving players from many different locations, temporalities, traditions, disciplines and spheres – intellectual and popular, among them. Interdisciplinary scholarship is part of this pluralist conversation; I am interested in serious critical work, but particularly work that engages with ideas circulating beyond and outside academia, and which is, hopefully, also intelligible (at least to some extent) across disciplinary and intellectual specializations. Although I see value in traditional reading, writing and publishing within the disciplines, I also advocate mixed methodologies, genres, media, and modes of expression. Interrogating common assumptions about the relationships between fact and fiction, reason and superstition, theory and the everyday, it is crucial to ask what is at stake and for whom. And to speculate, while remaining firmly grounded in the material realities of the present moments as they are experienced in a multiplicity of ways.

This thesis is an effort, for me, to begin working within and toward such speculative, contradiction-embracing and boundary-transgressing practices. I turn to speculation as a mode of scholarship but also as a more general approach to epistemology and ontology – as ways of thinking about research and writing, but also 'posthumanist' conceptualizations of being and knowing as well, recognizing that the blurred and permeable lines demarcating the human disrupt the certainties of Enlightenment Reason as much as they problematize certainties of identity and subjectivity. Contemporary cultural theory is rife with constellations of boundary issues and the preceding pages are my own intervention and move into this tumultuous

milieu. My focus lies with the contemporary, perhaps transitional moment, more posthumanist than postmodern; I am inspired to this focus by the irrational rationality of late twentieth and early twenty-first-century Western/Northern society: our simultaneous hybrid-making and ontological purification (as per Bruno Latour), the proliferating ubiquity of technoscience and opposition to technoscience's 'resourcing' of nature and threats to natural species categories (see Haraway, *Modest_Witness* 102-103), our persistent hopes for salvation through technoscience and our similarly persistent fascination with, even faith, in an array of figures, phenomena and beliefs that technoscience cannot explain away or rationalize out of existence.

Like Donna Haraway, I "largely concur" with Bruno Latour's assertion that we have never been modern (*Modest_Witness* 283), but we have never been human either (see Haraway in *When Species Meet*). Neither 'postmodernity' nor even 'posthumanity' captures the deconstruction necessary to the terms 'modernity' and 'humanity'. We are not 'after' or 'beyond' Western/Northern conceptualizations of the modern and the human, but rather, seek (at least some of us, if not all) to move beyond Western/Northern exceptionalist and universalist notions of what modernity and humanity can mean. Reading Fredric Jameson, Jean-François Lyotard, and Steven Best and Douglas Kellner, among others (in addition to, as well as through, Haraway), I see some usefulness in characterizing the late twentieth and now twenty-first century in relation to the postmodern, as a way of conceptualizing some of the boundary quandaries of the contemporary high-tech era. But if a postmodernist worldview recognizes boundary fluidity and contemporary complexity, a posthumanist perspective, as I see it, has the potential to more fully engage with the multidirectional implications of this condition, including issues of technological embodiment, nonhuman

agencies, and technoscientific as well as ethical and academic accountability. Critical posthumanism may facilitate responsible speculation.

My understanding of critical speculation emerges from and relies upon a wealth of interdisciplinary research, writing and activism beyond the work that I have been able to engage with in the preceding pages and chapters. Many scholars have applied themselves to the difficulties of examining and understanding complexity, devising interdisciplinary, polyphonic and mixed-methodological strategies for research, analysis and writing. The best of these tend to emphasize that we need to take many (more) things into account than traditional disciplinary or theoretical work has encouraged or even allowed. The approaches proposed are multiple and varied but often overlapping and frequently emerge from or reveal the influence of poststructuralist and postmodern critical interventions, and many have informed my understanding of responsible, critical, interdisciplinary scholarship, even where their work doesn't speak directly to the analysis I engage in here.

My own attempt and aspiration to a model of critical speculative scholarship, has meant working from the cross-disciplinary theoretical framework of critical posthumanism to analyze the figurations of posthuman and posthumanist knowings, beings and becomings in contemporary speculative fact-fiction, where imaginative representations may at times uphold traditional humanist rationality and the rational/irrational divide but also where opposing apprehensions and reframings might intermingle with progressive posthumanist possibilities. It has also meant engaging with the posthumanity of the contemporary world. I am inspired, in particular, by Donna Haraway's sustained pursuit to examine the "interface between specifically located people, other organisms, and machines" in search of strategies and tactics for

individual agency and "collective empowerment" amidst the broader "dramas of technoscience" in our contemporary world webs (52), which often look like separate spheres made up of discrete entities and populations. We live in multiple worlds. But unlike Kuhn's paradigms, they're not entirely incommensurable. And improving them doesn't have to be – and isn't – unimaginable.

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