

Introduction

Extreme Measures

Imagining what the earth might look like in the year 802701 seems absurd. The date is unfathomably distant: some 160 times longer than the roughly 5,000 years that comprise all of recorded human history. What could we hope to know about such a remote moment in time? What methods could we use to speculate so far into the future? How could any knowledge we generated in the process be made relevant or meaningful to our daily lives in the present? The sheer size of what this number signifies – the astonishing magnitudes of time it invokes – makes the task of narrating it seem inherently *unrealistic*.

But from another point of view, such a date seems not just realistic, but essential. H. G. Wells considered the year 802701 necessary for his purpose of providing readers “a glimpse of the future that ran counter to the placid assumption of that time that Evolution was a pro-human force making things better and better for mankind.”¹ To that end *The Time Machine* (1895) envisions a world in which *Homo sapiens* has diverged into two subspecies – Eloi and Morlocks – a process that would, by Wells’s reckoning, realistically take thousands of generations to unfold;² yet the protracted temporality of species change dwarfs the lifespan of an individual human being to such an extent that for Wells’s protagonist to experience it firsthand as an event, or a “glimpse,” the novel’s *durée* must stretch and contract in ways that destabilize its status as a believable account. The scale required to support the story’s scientific credibility, in other words, undermines that which sustains its narrative plausibility.

This antimony is exacerbated in the surprising detours that occur toward the end of the story, when the Time Traveller is propelled many *millions* of years forward into post- and nonhuman time: to an age of weird amphibious blobs, to black seas under a cold sun, to a moment when the earth stops turning. These latter scenes push far beyond the scope of evolutionary pessimism, opening onto a vastly larger horizon of cosmic indifference. Jumping over thousand- and then million-year gaps, the story

maroons its own narrative devices in environments that are increasingly hostile to human experience, and to the aesthetic forms that mediate it. The protagonist himself seems aware of this: standing on the distant shores of this alien planet, no longer recognizable as Earth, he relates:

From the edge of the sea came a ripple and whisper. Beyond these lifeless sounds the world was silent. Silent? It would be hard to convey the stillness of it. All the sounds of man, the bleating of sheep, the cries of birds, the hum of insects, the stir that makes the background of our lives – all that was over. . . . In another moment the pale stars alone were visible. All else was rayless obscurity. The sky was absolutely black. A horror of this great darkness came on me.³

This scene becomes “hard to convey” as description breaks down, as the fabric of the everyday – the “stir that makes the background of our lives” – transforms into its negative. Here, a conspicuous absence stands in for the mass extinction not just of living forms but also of the vibrant frequencies that make up life’s sensorium. Faced with the solipsistic loneliness of the cosmic abyss, the Time Traveller experiences, as one might expect, *horror*.

We might read the incursion of horror at this moment, eons into the future, as a symptom of scalar derangement – a crisis of scale which, in this case, takes on both psychological and formal dimensions. By voyaging to such a distant time, the Time Traveller becomes the last surviving representative of his species: an “ending.” In the process, he unwittingly touches the edge of a vast frame of narrative possibility, one large enough to encompass all potential plots whose futurity depends, ultimately, on the existence of other human beings. On this strange planet, the protagonist’s only remaining companions are a monstrous, tentacular creature and the tumultuous elements; the only available actions for him are escape and survival, or death. The barrenness of this uninhabitable earth winnows the novel’s “character-space” to one; its environment obviates typical strategies – whether comic or tragic – of novelistic closure.⁴

Horror takes on a dual function in this situation: it serves as a description of the protagonist’s subjective feeling but also as a signal that alerts us to a shift of genre, to a change of readerly expectations. What started off as an adventure has morphed into a testimony of existential dread, the darkest night of the soul. We might regard this shift as the novel’s last resort: a seemingly autonomous attempt to survive the annihilation of its plot through a textually reflexive transformation – a sudden reconfiguration of its narrative devices into a new pattern of signification. And if we conceptualize this shift as one that occurs along a continuum of

Introduction

3

scalar complexity, it becomes clear that the novel's efforts to represent the demise of the planet, up to and including its consumption in the eventual heat death of the universe, end up recapitulating entropic decay in miniature. It is as though, having dissipated the complexities of plot, character, and eventually language itself, the novel reverts to a more archaic, "primitive" mode.

On its imagined journey through the eons, *The Time Machine* brings us into contact not only with new and unfamiliar forms of life but also with a set of scalar paradoxes that have become all too familiar to us today. Narrating on scales that vastly exceed the individual subject involves taking serious formal and aesthetic risks. Yet, despite these risks, we now find ourselves resorting to increasingly extreme perspectives to make sense of a crisis in which planetary systems that once seemed impossibly remote have shifted to the foreground of lived experience, confronting us with daily reminders that our most mundane, everyday practices are entangled with – and to varying degrees directly responsible for – the ongoing catastrophes of climate change, ecological collapse, and mass extinction. As our search for narrative forms capable of navigating the bewildering conditions of the present becomes increasingly urgent, problems of scale pose pressing concerns not just for ecocritical approaches to literary studies but also, this book argues, for all fields – political, cultural, sociological, and scientific – that utilize narrative tropes, devices, and procedures to organize knowledge and communicate its significance.

The Time Machine provides both a starting point and a limit case for thinking about the questions that motivate this book: How far can novels stretch across space and time? Are they restricted in the extent and number of scales they can represent? If so, how might we ascertain those limits, and what might it mean to exceed them? To address these questions, I set out to investigate the *scalability* of the modern novel by examining how relationships of size and proportion organize stories into certain shapes, and showing what happens when they are stretched to breaking point. Conceptualizing the processes, devices, and dynamics of narrative systems in terms of scale allows us to reconsider how shifts of magnitude can impact the perceived integrity, unity, and totality of novelistic worlds, as well as our own. This study draws on new and emerging understandings of scale, but it also attends to how novelists writing at the turn of the twentieth century understood its meanings and implications; how their work engaged with historically specific epistemologies of scale and responded from a differently situated

perspective to the accelerating pace of modernity. It will consider how their strategies for mediating problems of scale shaped artistic practices and cultural expectations in profound and ongoing ways, and how the representational challenges and imaginative dilemmas that motivated aesthetic innovations more than a century ago speak to our contemporary situation.

In the chapters that follow, I set out to show how an interconnected group of authors writing in Britain around the turn of the twentieth century – H. G. Wells, Thomas Hardy, Joseph Conrad, and Virginia Woolf – developed a related set of techniques for rescaling novelistic form, for dramatically expanding the scope of fiction during a period when changing ideas of scale were upending the domain of everyday life and causing profound cultural anxieties about deep time, evolution, globalization, and extinction. For these authors, incorporating such vast scales in novels *directly* (that is, not just obliquely or symbolically) meant abandoning the limited perspectives of individual experience and entering the often inhospitable worlds being revealed by increasingly powerful methods of scientific observation: worlds that existed above and below the threshold of human perception, protracted in space between the subatomic and the interstellar; in time, between the microsecond and the geological epoch. I show that while these increasingly extreme perspectives were, by the turn of the twentieth century, considered necessary for sustaining empirically accurate accounts of reality, they were also at odds with the novel's prior commitments to the scale of daily life: the scale on which it cultivated a convincing richness of detail that lent plausibility and verisimilitude to fictional events; the scale on which it produced reality effects. To exceed that scale was, in other words, to push the limits of realism itself. Those limits can be detected, I argue, by the way that authors writing at the turn of the century returned to generic styles that had been ostensibly outmoded or superseded by the realist tradition – including melodrama, romance, horror, and epic – as a means of narrating empirically observable realities that nevertheless seemed to lie beyond the reach of the realist conventions.

This book regards what I unify under the term “the modern novel” as a media technology for thinking scale at a moment of planetary crisis, one preceding but indelibly linked to our own. It situates its analysis at a time of severe change in the history of earth systems, a time when a growing awareness of the global impacts of industrialization, imperialism, and a slow-gathering ecological disaster made the position of individual experience within such vast systems seem newly palpable – and problematic. While a text like *The Time Machine* makes the notion of “media technology” explicit in its title, in what follows I discuss how the style of long-form

Introduction

5

prose narration that typifies novels in general was adapted for imagining multi- or trans-scalar access⁵ – for generating scenarios that enabled characters (along with readers) to negotiate between domains and to slip, whether seamlessly or painfully, across different orders of magnitude. We are used to thinking of novels in terms of their capacity to nest the intimacies of human experience within concentrically larger circles of consequence – to frame the habitus of daily life within communal, national, and international spheres, but we are much less accustomed to describing their strategies for handling content that threatens to obliterate the significance of their most integral, fundamental unit of meaning: the individual subject. In what follows, I examine the ruptures that occur at moments when the everyday lives of individuals are juxtaposed with events and phenomena of such radically dissimilar sizes, speeds, and durations that the scale of the latter seems *incommensurable* – that is, lacking a common basis of comparison, or shared standard of measurement – with the former. When these scales cannot be fully reconciled or integrated within a single, linear narrative, their collision produces dramatic shifts of style and tone as they compete for the time of description and the space of plot. In such cases a particular tension arises between content and form, a kind of instability that occurs when a sudden and severe change of degree causes a novel’s organizing procedures to be distended or disrupted by its own outsized features. Studying these moments, I argue, helps us understand the scalar derangements that beset our contemporary situation, to comprehend why our experience of crisis is so consistently characterized as a loss of self-proportion, and why we continue to imagine the everyday as the ultimate horizon of the real, despite the risks of doing so.

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Problems of scale inform the representational capacities of fiction, not just at geological or cosmic magnitudes, but across the horizons of social life as well. George Eliot famously wrote that the most powerful effect a work of art can achieve is the “extension of our sympathies.”⁶ But how far can our sympathies realistically extend? When she made this influential claim in her 1856 essay “The Natural History of German Life,” Eliot was advocating realism as an aesthetic strategy for communicating the lived experiences of the working classes to a reading public whose daily reality seemed distantly removed from the immiserations of the urban slum and the factory floor. She reasoned that since each of us encounters the world from within a self-contained, individual perspective, we experience it via our own highly subjective moments of being, rather than through “generalizations and

statistics.” In making this point, Eliot was by no means promoting a crude phenomenological assertion that personal knowledge is the only reality we can ever know, nor that it is the most inherently authentic mode of knowledge; instead, she was arguing that, given the severe limitations of an individual’s experience, art should seek to extend its range by resembling the closest thing to it.

To cultivate what Eliot called “the raw material of moral sentiment,” novels should therefore provide readers with the most credible and persuasive alternative to interpersonal contact. To do so they needed to pierce impersonal categories like “the people,’ ‘the masses,’ ‘the proletariat,’ ‘the peasantry,” which might be useful as sociological abstractions but could never be experienced directly. At the same time, they needed to repudiate the kinds of artistic generalizations and misrepresentations that impeded genuine sympathy. Stock characters, she argued, bore little resemblance to real people, but timeworn tropes that either idealized laborers as honest, merry yokels, or else caricatured them as boorish louts proved “difficult to dislodge from the artistic mind, which looks for its subjects into literature instead of life.” Art needed to surmount the generic to become “the nearest thing to life”; only then could it truly become “a mode of amplifying experience and extending our contact with our fellow-men beyond the bounds of our personal lot.”

It is one thing to extend our contact with people whose lives are much different than our own, but what happens when novels undertake to “amplify experience,” as Eliot puts it, to scales that exceed not just the “bounds of our personal lot” but also the bounds of life as we know it? How far can novels extend our contact across time and space – into the deep past or the far future – to generations of people who do not yet, and may never, exist? How broadly can they extend our contact beyond the human – to other forms of life, or to nonliving objects, or to planetary forces? Under such protracted conditions, how can narrative forms like the novel satisfy the aesthetic burdens of realistic representation? How can they achieve and maintain the level of detail that confers a mimetic aura? While these are clearly salient questions for contemporary literature, they cannot be confined to critical studies of the present. At the same time, contemporary understandings cannot be applied retroactively through a simple process of substitution, as though new vocabularies and methods could be overlaid neatly onto the epistemological terrain of the past. It is increasingly clear that there is a transhistorical connection between what some contemporary scholars are calling our “crisis of scale” and what authors writing almost a century earlier recognized as a complete “change of scale in human

affairs.”⁷ This correspondence, I argue, is more than semantic: its resonance suggests that these are in fact observations of the same ongoing phenomenon – an echo returning from two locations separated in time.

Form, Development, and the Accelerating Pace of Change

This book investigates how the novel, a form adapted to depicting life at a certain pace, reacted to sudden and radical changes of scale. Its argument supposes that certain scales that functioned as the predominant horizons for novelistic representation were and are still being strained by an ongoing process of exponential acceleration, and it is therefore important first to specify the dimensions of human experience upon which novelistic form was modeled. Mark McGurl proposes that we might regard the “rise and subsequent history of the novel” in terms of a gradual “compression” of narrative form, whereby the novel resolves the “problem of scale” by tightening its focus on the human, and excluding what lies beyond it: “Whether pitched at the level of small-scale intimacies or straining toward a grasp of the entire social system, the limits of the novel are defined by the limits of the human – which, to be sure, leaves space enough for a discourse of majestic complexity.”⁸ Canonical accounts of the novel’s historical development emphasize that it was the first form to take seriously the rhythms and structures of everyday life.⁹ Its commitment to representing the secular world of individual subjects, as Michael McKeon argues, marked a significant departure from the mythical, romantic ambits of its predecessors.¹⁰ This shift of priority involved not only a change of subject matter but also major adjustments to the pace of storytelling, since, as Ian Watt explains in *The Rise of the Novel*, the “novel’s closeness to the texture of daily experience directly depends upon its employment of a much more minutely discriminated time-scale than had previously been employed in narrative.”¹¹ One might add that alongside new techniques for scaling down to the mundane textures of the everyday, the novel’s ability to generate narrative significance likewise depended on new techniques for scaling up, for extrapolating larger meanings from within the much more tightly compressed space and time of daily experience.

Modern theories of the novel tend to regard these limitations as productive constraints, an idea perhaps best exemplified in György Lukács’s discussion of biographical form. What makes the novel distinctive as a modern narrative system, Lukács contends, is its “refusal of the immanence of meaning to enter into empirical life.” This, however, “produces a problem of form,” since liberating the novel from immanent meanings

also means shedding prescribed narrative *telos*, exposing it to what Lukács calls “a ‘bad’ infinity.”¹² The novel therefore “needs certain imposed limits in order to become form,” limits it borrows from the pattern of an individual’s life story, whereby a “heterogeneous mass of isolated persons, non-sensuous structures and meaningless events receives a unified articulation by the relating of each separate element to the central character and the problem symbolized by the story of his life.”¹³ Biographical form thus supplies narrative closure while nevertheless (as Lukács clearly understands) shifting a tremendous amount of symbolic significance onto individuals, and staking the meaning of external events to the temporalities of character development.

This book attends to situations in which the novel’s two central commitments, “closeness to the texture of daily experience” and fidelity to empirically observable reality, become contradictory. If, as critics like George Levine have convincingly argued, the rise and popular success of the realist novel was strongly linked to the rise of empiricism, and its signature innovations – accurate observational distance, precisely detailed description, impartial authorial tone – were closely related to the procedures of the scientific experiment, what happened when these mimetic techniques were made to contend with the unimaginable vastness that was the actual object of scientific inquiry?¹⁴ How, for example, could a novel reconcile the temporality of daily life with the timescale of the geological epoch, or with theories of entropy that anticipated the extinction of the sun, followed eventually by the “heat death” of the universe – “the end of all physical phenomena”?¹⁵ At the other end of the spectrum, how could a novel reconcile the daily lives of human characters with the granular detail of microscopic worlds? As the narrator of *Middlemarch* famously warns us, looking too closely at the surface of the everyday threatens to reveal layers of complexity so overwhelming that, “our frames could hardly bear much of it.”¹⁶ We do not need to journey to the edge of the cosmic abyss, as Wells’s Time Traveller does, to experience the terror of the infinite; Eliot’s narrator reminds us that it can be found much closer to home: “If we had a keen vision and feeling of all ordinary human life, it would be like hearing the grass grow and the squirrel’s heart beat, and we should die of that roar which lies on the other side of silence. As it is, the quickest of us walk about well wadded with stupidity.”¹⁷ It is precisely these insulating, limiting qualities that help us manage problems of scale. They are useful adaptations that allow us to navigate and survive in the world by narrowing our sensory perceptions to a range of volumes and frequencies that our bodies and brains can process. Just beyond our embodied perceptions lies a much vaster reality, and while *Middlemarch* speculates about

Introduction

9

how we might experience life from alien perspectives and at much faster speeds, its action sticks to its titular middle ground, progressing at a pace that the “frames” of its human characters can handle.

Ironically, just at the moment when mechanisms of biological adaptation were becoming widely understood, the accelerating pace of technological change seemed to be outstripping the generational pace of human evolution. This is the crisis at the heart of Wells’s 1908 novel *The War in the Air*. Set in the near future, Wells’s narrator longs nostalgically for a recent past that already seems irrecoverably distant, a time when “gentle and noble emotions had been a fine factor in the equipment of every human being,” a time before the emotional “equipment” of the species had been mutated by a “wild rush of change in the pace, scope, materials, scale, and possibilities of human life.”¹⁸ The novel depicts a runaway arms race that culminates in worldwide conflict, and within a decade its prophetic vision of mechanized aerial warfare would shift from fictional speculation to an uncannily accurate description of daily reality across Europe:

All the old settled mental habits and traditions of men found themselves not simply confronted by new conditions, but by constantly renewed and changing conditions. They had no chance of adapting themselves. They were annihilated or perverted or inflamed beyond recognition.¹⁹

For Wells, this fundamental transition in human perception was the logical, predictable consequence of current social, scientific, and technological trends – of an unrelenting “escalation” that was distorting cognitive and emotional mechanisms that had no time to adjust. Human beings were altering the environment at a global scale, but “had no chance of adapting themselves” to it. These sentiments seem far bleaker than Virginia Woolf’s famous remark, “On or about December 1910, human character changed,” delivered in an essay that also famously rebuked Wells’s characteristically oversized point of view. Woolf nevertheless shared with Wells a sense that the “settled mental habits” of everyday life had been fundamentally altered in less than a generation.²⁰ “A shift in the scale – the war, the sudden slip of masses held in position for ages,” she wrote – “has shaken the fabric from top to bottom, alienated us from the past and made us perhaps too vividly conscious of the present.”²¹ Whereas Wells might have anticipated that total war would rupture the fabric of reality, Woolf held that his writing could no longer adequately describe the subjective experience of living in the future he had predicted.

The scalar changes both writers observed tend to be associated with the “shock of the new,” a moment of impact whose affective tremors produced aesthetic and formal corollaries distinctive to literary modernism.²²

This book argues that the shock can be traced further back to a series of seismic shifts during the late-Victorian period that inaugurated profound changes in “the scale of human affairs.” While for Britain this time can be described in terms of “industrial modernity” or as the “age of imperialism,” its literature bears witness to a fragmented and uneven pace of development. At its peak, the British Empire was aspiring to manage a global political network even as it was still internally adjusting to the social upheavals of the industrial revolution. Scale became an essential concept for surveying space and surveilling populations, for exerting managerial control both inside and outside of national borders. Urbanized spaces bordered on undeveloped countryside, and a process of “endocolonization” was running concurrently with imperialist expansions.²³ Thus Joseph Conrad could accurately describe his historical present in terms of the disappearing possibilities for growth overseas, as a time in which all “the blank spaces of the earth” were being filled in, while Thomas Hardy could just as accurately describe it as an age of extinction for “country customs and vocations,” which were becoming “obsolete and obsolescent” so quickly and completely that if his novels mischaracterized them, “nobody would have discovered such errors to the end of Time.”²⁴

During this period, the accelerating pace of change could be experienced directly, as a physical sensation of speed. Between 1860 and 1920, the distances covered by railway lines grew by an order of magnitude, from 100,000 to 1,000,000 kilometers.²⁵ This produced an exponential increase in the speed and length of travel, but it also, as Enda Duffy writes, “was offered to masses of people as a simulacrum of force and a source of imaginary personal empowerment.”²⁶ The new availability of “speed experience,” Duffy observes, reshaped the late-Victorians’ understanding of “scale, perception, distance, and space. It also altered the spatial metaphors and tropes they introduced into their thinking and dreaming on all aspects of their existence.”²⁷ The railway is of course more than figuratively significant in literature of the period; the plots of novels by, for example, Dickens, Eliot, Tolstoy, and Hardy, depend on it directly. But train travel also changed the production of fiction in material ways: reading habits were shaped by the distance and duration of daily commutes, publishers printed specific editions for this emerging market, and booksellers sold their products directly in the stations. It seems plausible to speculate that the forms of fiction that emerged, thrived, and proliferated during the late-Victorian period were those best adapted to the speed of railway travel.²⁸ Yet for all of its revolutionary impacts on the pace of life, the railway also provides an object lesson on the limits of scalability. This iconic modern technology was (and still is – in ways that are