

The Higher Spaces of the Late Nineteenth-Century Novel

Mark Blacklock

Between 1869 and 1878 the idea of n -dimensional geometry was the subject of involved discussion among British mathematicians, physicists, and philosophers. The earnest experiment in discovering how extending the dimensionality of manifolds might aid mathematical proofs, inspired by speculations by European mathematicians in the 1820s, became the focus of disciplinary skirmishes over the epistemological nature of space and its relationship with geometry.

The case for speculating about four-dimensional space was most frequently made in the form of an analogy, as it had been by J. J. Sylvester in his inaugural Presidential Address to the Mathematical and Physical Section of the British Association for the Advancement of Science in 1869:

For as we can conceive beings (like infinitely attenuated bookworms in an infinitely thin sheet of paper) which possess only the notion of space of two dimensions, so we may imagine beings capable of realising space of four or a greater number of dimensions.¹

Many followed Sylvester's analogy. Hermann von Helmholtz wrote in the *Academy* of intelligent beings confined to the surface of a sphere; G. F. Rodwell described a man reduced in thickness: 'Now he is a mere plane, an infinitely thin surface; he occupies space approximately of two dimensions; his eyes are on a line. Try to imagine what the ideas of space of such a being would be'; C. J. Monroe, in correspondence with his

¹ J. J. Sylvester, 'A Plea for the Mathematician', in *The Laws of Verse* (London: Longmans, Green, 1870), pp. 109–12 (abridged repr. of 'A Plea for the Mathematician', *Nature*, 1 (1869), 237–39, 261–63). Sylvester was responding to T. H. Huxley, who had recently published an article in which he had distanced mathematics from the natural sciences, writing that 'mathematics is that study which knows nothing of observation, nothing of experiment, nothing of induction, nothing of causation' ('The Scientific Aspects of Positivism', *Fortnightly Review*, June 1869, pp. 653–70 (p. 667)).

friend James Clerk Maxwell, pondered the spatial experience of ‘a slimy sheet of cells’.² All aimed to think through the experience of limited dimensionality in order to explicate the speculated experience of raised dimensionality.

Others disputed the results produced from such models and argued against the worth of dangerously metaphysical notions in mathematics: R. A. Proctor, the editor of *Science*, described such reasoning as ‘geometrically objectionable’; Dutch philosopher J. P. N. Land alerted readers to literary forebears of this mode of thinking dimensionality in Plato’s allegory of the cave and Gustav Fechner’s story ‘Vier Paradoxa’, written as Dr Mises, and gave sage warning of the complexities of interdisciplinary work:

In our wanderings on the border between science and philosophy we are apt to forget that it is impossible to move on both sides of the boundary line at once, and that whoever crosses it shifts his problem as well as his method.³

By the time William Spottiswoode addressed the same British Association audience nine years later, he felt the need to mount a defence of manifold space, which had fallen victim to misapprehension:

It is not seriously regarded as a reality in the same sense as ordinary space; it is a mode of representation, or a method which, having served its purpose, vanishes from the scene. Like a rainbow, if we try to grasp it, it eludes our very touch; but, like a rainbow, it arises out of real conditions of known and tangible quantities, and if rightly apprehended it is a true and valuable expression of natural laws, and serves a definite purpose in the science of which it forms part.⁴

² Hermann von Helmholtz, ‘The Axioms of Geometry’, *Academy*, February 1870, pp. 128–31 (p. 129); G. F. Rodwell, ‘On Space of Four Dimensions’, *Nature*, 8 (1873), 8–9 (p. 9); London, London Metropolitan Archives, MS Monro correspondence, ACC/1063/2109a.

³ R. A. Proctor, *Familiar Science Studies* (London: Chatto & Windus, 1882), p. 21; J. P. N. Land, ‘Kant’s Space and Modern Mathematics’, *Mind*, 2 (1877), 38–46 (p. 38).

⁴ William Spottiswoode, ‘Presidential Address’, *Report of the Forty-Eighth Meeting of the BAAS Held at Dublin in August 1878* (London: Murray, 1879), pp. 22–23.

Spottiswoode searched for ‘a counterpart of this in common life’ and suggested perspective drawing and the representation in literature of past, present, and future in one ‘common focus’:

Or once more, when space already filled with material substances is mentally peopled with immaterial beings, may not the imagination be regarded as having added a new element to the capacity of space, a fourth dimension of which there is no evidence in experimental fact? (p. 23)

The fourth dimension, the very first of the n -dimensions, despite its roots in geometry, a science of reliable replicability and rigidity, of grounded imperial solidity, lent itself immediately to the speculative, the imaginary, and the literary. And so, as a cultural object exceeding scientific discourse, it played out. From the late 1870s, the fourth dimension became the favoured plaything of a series of spiritualists and occultists for whom it promised a scientifically sanctioned escape from the material, and from the early 1880s it nourished literary production in a series of remarkable ways.

The present piece attempts to illuminate literary developments in the light of geometric developments. In the wake of the publication of Sylvester’s address in *Nature*, discussion broke out over whether or not the idea of n -dimensions violated Kant’s notion of space, a discussion that was continued in Hermann von Helmholtz’s essays on ‘The Axioms of Geometry’. I would like to frame the current argument within this scholarly dispute. It indicates the extent to which Kantian philosophy was the mode in which space was thought in the British academy of the late nineteenth century. This influence stretched well beyond the cloisters of academe. Isobel Armstrong describes Kantian space as ‘foundational’ for the nineteenth-century novel, underpinning the way in which ‘a writer convince[s] us through the abstractions of language that spatial experience created in a text is, by an extraordinary transposition, recognizable, vivid, a lived experience’.⁵

Armstrong refers to Kant’s four propositions of space, as outlined in his inaugural dissertation:

⁵ Isobel Armstrong, ‘Spaces of the Nineteenth-Century Novel’, in *The Cambridge History of Victorian Literature*, ed. by Kate Flint (Cambridge: Cambridge University Press, 2012), pp. 575–97 (p. 575).

A. The concept of space is not abstracted from outer sensations. [...] B. The concept of space is a singular representation embracing all things within itself. [...] C. The concept of space is a pure intuition. [...] D. Space is not something objective and real, nor is it substance, nor an accident, nor a relation; it is, rather, subjective and ideal; it issues from the nature of the mind in accordance with a stable law as a scheme, so to speak, for co-ordinating everything which is sensed externally.⁶

Armstrong expands: ‘Kant added a further element to his spatial thought, the body’ (p. 577). In the short essay ‘Concerning the Ultimate Ground of the Differentiation of the Directions of Space’, Kant began to describe ‘an absolute and original space’, which was subjective but not reliant upon the senses. He highlighted a shortcoming in Leibniz’s *analysis situs*: that it did not distinguish between objects of opposite orientation, considering equilateral triangle A, pointing to the left, exactly the same as equilateral triangle B, pointing to the right.

Kant assumed the tri-dimensionality of space: ‘Because of its three dimensions, physical space can be thought of as having three planes, which all intersect each other at right angles.’⁷ These planes not only defined the body, but also cognition of objects outside of the body. He identified a curiosity with the vertical plane that split the body into left and right: based on subjective physical experience there were objects that were either left-handed or right-handed or rotated clockwise or anti-clockwise. Kant identified many such examples: the swirl of hair on the crown of the head, hops growing up a pole, snail shells. He enlisted these naturally occurring objects to prove a point:

The ground of the complete determination of corporeal form does not depend simply on the relation and position of its parts to each other; it also depends on the reference of that physical form to universal absolute space, as it is conceived by geometers. (‘Concerning the Ultimate Ground’, p. 369)

⁶ Immanuel Kant, ‘On the Form and Principles of the Sensible and the Intelligible World [Inaugural Dissertation]’, in *Theoretical Philosophy 1755–1770*, trans. and ed. by David Walford in collaboration with Ralf Meerbote, Cambridge edition of the works of Immanuel Kant (Cambridge: Cambridge University Press, 1992), pp. 373–416 (pp. 395–97).

⁷ Immanuel Kant, ‘Concerning the Ultimate Ground of the Differentiation of the Directions in Space’, in *Theoretical Philosophy 1755–1770*, trans. and ed. by Walford and Meerbote, pp. 361–72 (p. 366).

Objects, such as right and left hands, which could not be made to occupy the same limited space — ‘can be exactly equal and similar, and yet still be so different in themselves that the limits of the one cannot also be the limits of the other’ (p. 369) — he termed ‘incongruent counterparts’. These proved that relationality was not between objects but towards a geometric space.

This article begins from these premises, in agreement with the assertion that Kantian space was foundational for the nineteenth-century novel. It shows how the development of ideas surrounding and responding to n -dimensional geometry in a variety of cultural contexts in the second half of the nineteenth century complicated key Kantian propositions and, specifically, the idea of incongruent counterparts, thereby encouraging innovative literary responses to a metaphorically reconfigured spatiality. It reads a deliberately esoteric array of fictions concerned with higher space — high- and low-cultural, short- and long-form, generic and literary, *fin-de-siècle* and early twentieth-century. Focusing on Henry James’s theorization of his practice, it argues that the erosion of the foundations of Kantian space nourished modernist literary production at the level of technique.

The emergence of the fourth dimension

August Möbius, Professor of Astronomy at the University of Leipzig, had first speculated an n -dimensional geometry in a section of his 1827 paper *Der barycentrische Calcul*, entitled ‘On Higher Space’:

It seems remarkable that solid figures can have equality and similarity without having coincidence, while always, on the contrary, with figures in a plane of systems of points on a line equality and similarity are bound with coincidence. The reason may be looked for in this, that beyond the solid space of three dimensions there is no other, none of four dimensions [...]. For the coincidence of two equal and similar systems, A, B, C, D, ... and A', B', C', D', ... in space of three dimensions, in which the points D, E, ... and D', E', ... lie on opposite sides of the planes ABC and A'B'C', it will be necessary, we must conclude from analogy, that we should be able to let one system make a half revolution in a space of four dimen-

sions. But since such a space cannot be thought, so is also coincidence in this case impossible.⁸

Möbius's conclusion that 'such a space cannot be thought' was not entirely accurate: thinking it was precisely what he was doing, albeit as an aside to developing his new technique in calculus. This tangential indication of direction was followed by the British mathematicians George Salmon and Arthur Cayley, who produced a series of papers developing what became n -dimensional geometry, but Möbius's gentle suggestions on coincidence, or congruence, had philosophical implications too, questioning Kant's observations on handedness. By indicating that the impossible space of four dimensions would enable the inversion of solid figures, Möbius began to sketch the possibilities for the fourth dimension.

When Simon Newcomb opened the inaugural issue of the *American Journal of Mathematics* with a 'Note on a Class of Transformations which Surfaces May Undergo in Space of More Than Three Dimensions', n -dimensional geometry was already well established as something useful and practical to mathematicians. Within the frameworks of analytical geometric scenarios that mathematicians knew to be unrepresentative of physical space, results regarding higher-dimensioned space were produced. Newcomb prefaced his projective workings with a description of fourth-dimensional transformations that was clear enough for the lay reader:

If the material bodies which surround us were placed in a space of more than three dimensions, their kinematic susceptibilities would be increased in a manner which, at first sight, would seem very extraordinary [...]. If a fourth dimension were added to space, a closed material surface (or shell) could be turned inside out by simple flexure; without either stretching or tearing.⁹

J. P. N. Land's concerns over disciplinary 'wanderings' proved to be accurate. The features of higher space worked out in a speculative mathematical context soon fired imaginations outside of the mathematical

⁸ August Möbius, 'On Higher Space', in *Sourcebook in Mathematics*, ed. by D. E. Smith, trans. by Henry P. Manning (New York: McGraw Hill, 1929), pp. 525–26 (p. 526).

⁹ Simon Newcomb, 'Note on a Class of Transformations which Surfaces May Undergo in Space of More Than Three Dimensions', *American Journal of Mathematics*, 1 (1878), 1–4 (p. 1).

academy and a series of catalytic interventions from scholars producing hybrid works dragged n -dimensional discourse into turbulent terrains. In 1878 the German astrophysicist Johann Karl Friedrich Zöllner claimed to have demonstrated that seance phenomena could be ascribed to the actions of four-dimensional intelligences by commissioning the production of knots on a sealed cord. Splicing together the abstract ‘closed space curves’ of Felix Klein’s topological work with the material knots of stage conjurers reproduced in seances, Zöllner fused the ideal forms of mathematics with the illusory materials of magicians. His experiments were seized upon by the spiritualist press as lending scientific legitimacy to seance phenomena, with the voguish idea of the fourth dimension the crucially legitimizing concept.

As the passage between domains of thought accelerated, readers and writers failed to identify translations between empirical events, abstract models and the language used to describe them. Analogy was frequently misread as a guaranteed representation of the truth, despite the semantic profligacy of this construction. Geometry was assumed to match directly with space — if there was an n -dimensional geometry, mustn’t there necessarily be n -dimensional spaces?

The English writer Charles Howard Hinton worked with the dimensional analogy, the rhetorical construction that had become familiar to readers of academic journals over the course of the 1870s, to produce a series of texts that occupied a hybrid terrain between self-help thought experiments, scientific romances, and mathematical and physical treatises. Hinton’s self-avowedly speculative work described the powers a four-dimensional being would possess: ‘such a being would be able to make but a part of himself visible to us [...], would suddenly appear as a complete and finite body and as suddenly disappear’; it would have the ability to ‘get out of a closed box without going through the sides’.¹⁰

Rapid elisions between matter and thought were typical of texts dealing with higher-dimensioned space. In his first full-length work, *A New Era of Thought* (1888), Hinton pondered the curiosity of being able to think a space that could not be sensed. He argued that ‘it is by a structure in the brain that [the human being] apprehends nature, not immediately’. What we perceive are ‘models and representations’ in ‘minute portions of matter’ in the brain, portions ‘beyond the power of the microscope in

¹⁰ C. H. Hinton, ‘What is the Fourth Dimension?’, in *Scientific Romances* (London: Swan Sonnenschein, 1886), pp. 3–32 (pp. 25, 27).

their minuteness'. These 'brain molecules' did not, however, directly mimic external matter:

It may be that these brain molecules have the power of four-dimensional movement, and that they can go through four-dimensional movements and form four-dimensional structures. If so, there is a practical way of learning the movements of the very small particles of matter — by observing, not what we can see, but what we can think.¹¹

This oscillating neurological materiality incorporated Hinton's ethereal fourth dimension within the brain, and the brain within it.

In the same text Hinton made another significant argument for the development of *n*-dimensional thought, arguing for the existence of both a material and an eternal ethereal body for any organism, and an 'essential unity of the race':

We find an organism which is not so absolutely separated from the surrounding organisms — an organism which is part of the aether, and which is linked to other aethereal organisms by its very substance — an organism between which and others there exists a unity incapable of being broken, and a common life which is rather marked than revealed by the matter which passes over it. (p. 64)

Hinton's speculative extrapolations from the mathematical to the physical, biological, and ethical nourished more overtly occultist appropriations of higher space. The anonymous *I Awoke! Conditions of Life on the Other Side Communicated by Automatic Writing* (1893) sold at one shilling net and, reprinted and extended two years later, described a higher-dimensional afterlife. It referred throughout to 'the Master', a Christ, of 'a form which is in four dimensions, and which cannot be seen by ordinary earthly vision'.¹² An appendix described the conditions of the various dimensions in which the dead lived: 'there is a fourth dimension [...] which represents what you might call the inter-penetrative sphere.' It continued: 'this fourth dimension, only guessed at by you, is our first, the other three

¹¹ C. H. Hinton, *A New Era of Thought* (London: Swan Sonnenschein, 1888), pp. 48, 49.

¹² *I Awoke! Conditions of Life on the Other Side Communicated by Automatic Writing* (London: Simpkin and Marshall, 1893), p. 25.

fall from us as crude and imperfect.’ The inhabitants of this dimension were capable of impossible feats of transportation:

This power, when perfected, would give man absolute power of progression in every direction and in every part of the universe. He could pass through the heart of mountains, or could rise into the atmosphere to any height by altering, as it were, his own density, and the density of his path; nothing would prove a hindrance. (*I Awoke!*, p. ii)

The campaigning journalist W. T. Stead was one of many who embraced such giddy, sensational notions. The fourth dimension, wrote Stead, could be imagined by those ‘with a vivid imagination’, but ‘has never been seen by mortal man’:

We however get glimpses of it in clairvoyance, in the phenomena of hypnotism, and in all the experiments which are known as telepathy, crystal-gazing, thought-reading, and all things in which we see, hear or communicate through things, which according to the known laws of third dimensional space, would render communication impossible.¹³

Stead was in no doubt about the correct prepositional description for higher space: indeed, this prepositional action was its very essence: ‘Hence, Throughth.’ The interpenetrative qualities of higher space, short-circuiting the very materiality of matter, were central to Stead’s ‘throughth’ because they enabled unhindered communication, through which access to ‘truth’, the other half of the pun, might be achieved. Above all, for Stead, ‘throughth’ was a medium.

While popular occultist and quasi-scientific, quasi-literary texts extended mathematical abstractions in imaginative and metaphorical directions, the features of higher space from which they extrapolated were all developed in the context of rigorously worked mathematical papers. Inversion and flexure of solid objects were mathematically possible if a four-dimensional manifold were allowed, and n -dimensional geometry was both useful and workable: as Spottiswoode had argued, ‘it is a true and valuable expression of natural laws, and serves a definite purpose in the science of which it forms part’ (p. 23). This mathematics nevertheless

¹³ W. T. Stead, ‘Throughth; or, On the Eve of the Fourth Dimension: A Record of Experiments in Telepathic Automatic Handwriting’, *Review of Reviews*, April 1893, pp. 426–32 (p. 426).

posed a number of questions of the dominant view of Kantian space. First and foremost, Kant's close binding of 'apodictically certain' geometry and space — both a priori; both, in the terms of those who discussed Kant in the British academy, intuited — had to be questioned. If these geometries were true, either spaces to match them must exist, or geometry and space were not locked together.

Furthermore, higher space could no longer be thought of as space external, outside me: this was a space that was also through me. In it, two three-dimensional subjects could occupy the same space or the same subject could occupy two distinct spaces at the same time. The subject might even occupy a part of the four-dimensional space such that it did not impinge on a particular three-dimensional section of that space at all, might slip out of three-dimensional space altogether but be close to it.

As this last feature indicates, higher space also made problematic the notion of space as a unity. Space of dimensions $n-1$ is by geometric definition a 'section' of n -dimensional space: in the case of three-dimensional space a two-dimensional plane is a cross-section of said space; three-dimensional space has an analogous relationship to four-dimensional space. We become aware of the logical problems of applying geometrical ideas to space itself. The cross-section is an abstraction. Any object in three-dimensional space that approaches a plane remains three-dimensional. Its thickness may be infinitely small, but it has thickness. If space is to remain a unity, if there is to be only one kind of space, mustn't it be of consistent dimensionality?

Finally, higher space is not a priori, a pre-existent conditioner of reason. It is a product of the understanding alone, an a posteriori concept without empirical content. How, then, to represent the fourth dimension in words? How to represent a kind of space speculated from mathematics but, despite the claims of some of its proponents, never intuited, or indeed sensed, but only thought or imagined? How to represent a kind of space for which remarkable features were claimed but never experienced? For Armstrong,

a novel needs not simply to evoke space, as it would a smell or the taste and sight of a madeleine (famously in Proust) or a jam puff (in George Eliot's *The Mill on the Floss*). It has to make space a constitutive element, must produce it.

She argues that this production can be achieved

by alternately negating and confirming the four principles that make spatial experience possible. Take away the body, reintroduce it: empty space of objects, restore objects; obliterate partitioned space, reinstate division; all of these are procedures that can be reversed or combined with one another. We are prompted into intensified spatial imagining when the novelist signals a change in spatial relations. (p. 578)

It is instructive to ask how fiction produces *higher* space, how it makes higher space a constitutive element; what is the nature of the *higher*-spatial subject as opposed to the 'interspatial' subject Armstrong sees as germane to the novel? How are *its* relations structured? What is clear from the outset is that higher space suggests forms of embodiment (or disembodiment) beyond those of standard space and in the following section I explore how these features were represented before moving to consider how the higher space might be read as metaphorically informing techniques of representation.

Bodies

At the level of representation the fourth dimension enables the body to be inverted, absented or doubled in three-space. Incongruent counterparts can be made to coincide, space is no longer a unity and two objects or consciousnesses can occupy the same space.

Incongruent counterparts fuelled extraordinary speculations. Hinton explored the chiral inversions of the fourth dimension in his first collection of *Scientific Romances* in the pieces 'A Plane World' and 'A Picture of Our Universe'. 'A Plane World' borrowed from Edwin Abbott's *Flatland* (1884) the conceit of personified geometric figures to conceive of a male and female pair or triangles of opposite orientation: 'It is said that two beings, the most ideally perfect Vir and Mulier, were once living in a state of most perfect happiness when, owing to certain abstruse studies of the Mulier, she was turned irremediably into a man' (*Scientific Romances*, p. 146). Mulier would not tell the secret of her inversion but pledged to either die or return to her prior orientation. Hinton continues the metaphoric inversion of gender in his explanation:

From our point of view it is easy to see what had happened.
If the figure Mulier be taken up and turned over it will be

easy to see that, though still a woman, her configuration has become that of a man. (p. 147)

The idea of gendered congruence was not isolated to the work of Hinton. The 1904 novel *Eduard's Traum* by the humorist Wilhelm Busch, an heir to the tradition of the geometric satire, riffed extensively on incongruent geometric couples and the annihilation of their differences in higher space:

I inquired for the congruence office, an institution which is similar to the county clerk's office where marriage licences are given. As no one could give me any information I went to the mayor and was told 'We have no such nonsense; any one anxious for such an experience, especially if it be a case of symmetrical congruence, will please go to the third dimension.'

As the atmosphere in the mayor's office was very close I bade him good-bye and went through the ceiling into tri-dimensional space where stereometric liberty prevails and where spatially sympathetic couples have the licence of marriage relations. But even here no exceptions were allowed.

I just saw two spherical triangles, one the exact reflected image of the other. They returned in tears from the congruence office where they had been refused. A pair of infinitely delicate gloves, one left one and one right one, were groomsman and bridesmaid, and they comforted the unfortunate couple, saying that they were in the same predicament and if there was no other hope they could after all elope into the fourth dimension, where nothing was impossible. 'Alas!' sighed the bride, 'who knows what the fourth dimension is like?' One might have pitied the poor people but we must not be too quick with our sympathy, for the inhabitants of this unsubstantial country are hollow, sun and moon shine through them, and any one who stands behind them can easily count the buttons on their vests in front.¹⁴

For higher-spatial thinkers with progressive views about gender and sexuality, the potentials of higher-spatial union generated optimism or humour and the dissolution of fixed oppositions. In physical mode, though, Hinton speculated alternate outcomes to the meeting of doubles. 'A Picture of Our Universe' invited its reader to picture coils of opposite

¹⁴ Wilhelm Busch, *Edward's Dream*, trans. and ed. by Dr Paul Carus (Chicago: Open Court, 1909), pp. 36–37.

orientation, ‘twists’, and ‘image twists’. Relating these to the negative and positive charges of static electricity, it imagined that for every twist the image twist, its ‘simulacrum’, was somewhere produced. Having rehearsed various conditions for the conduction and discharge of electric current and extrapolated to larger, more complex bodies, Hinton transposed his speculations onto the human body in terms that reproduced the annihilation of the idea of incongruent counterparts:

We must conceive that in our world there were to be for each man somewhere a counter-man, a presentment of himself, a real counterfeit, outwardly fashioned like himself, but with his right hand opposite his original’s right hand. Exactly like the image of the man in a mirror. And then when the man and his counterfeit met, a sudden whirl, a blaze, a little steam, and the two human beings, having mutually unwound each other, leave nothing but a residuum of formless particles. (*Scientific Romances*, p. 172)

Gottfried Plattner, the subject of H. G. Wells’s ‘The Plattner Story’ (1896), does not meet but becomes his own ‘counterfeit’. The narrator — the voice of Wells at barely one remove — informs us: ‘Never was there a more undeniable fact than the inversion of Gottfried Plattner’s anatomical structure.’¹⁵ Plattner, a teacher at a private school, has disappeared for nine days after igniting a mysterious green powder brought to the school by a pupil. On his return he has become a mirror image of himself:

Gottfried’s heart beats on the right side of his body. [...] All other unsymmetrical parts of his body are similarly misplaced. The right lobe of his liver is on the left side, the left on his right; while his lungs, too, are similarly contraposed. (p. 194)

Wells offers the following technical explanation for the fate that has befallen Plattner:

There is no way of taking a man and moving him about in space, as ordinary people understand space, that will result in our changing his sides [...]. Mathematical theorists tell us that the only way in which the right and left sides of a body can be changed is by taking that body clean out of space as

¹⁵ H. G. Wells, ‘The Plattner Story’, in *Selected Short Stories* (London: Penguin, 1968), pp. 193–211 (p. 193).

we know it — taking it out of ordinary existence, that is — and turning it somewhere outside space [...]. To put the thing in technical language, the curious inversion of Plattner's right and left sides is proof that he has moved out of our space into what is called the Fourth Dimension, and that he has returned again to our world. (pp. 195–96)

Plattner is fortunate to return as more than the 'residuum of formless particles' envisaged by Hinton. He has undergone a higher-dimensional accident but has been able to come back, inverted: a curious body, certainly, a corporeal oddity, but not impossible — *situs inversus* is a well-documented medical phenomenon. He has gone suddenly, like Muller — 'she disappeared absolutely; although she was surrounded by her friends, she absolutely vanished' (Hinton, *Scientific Romances*, p. 147) — but just as suddenly returned. In Wells's *The Invisible Man* (1897), the eponymous Griffin, another character whose corporeal transparency relies on the fourth dimension — 'I found a general principle of pigments and refraction, a formula, a geometrical expression involving four dimensions' — struggles to make the return.¹⁶

The continuum of corporeal possibilities afforded by higher space run the gamut from total absence to full (or doubled) presence. Algernon Blackwood's story 'A Victim of Higher Space' (1914) embodies all the stages along the spectrum, an expanding cross-section in one figure:

A thin perpendicular line tracing itself from just above the height of the clock and continuing downwards till it reached the woolly fire-mat. This line grew wider, broadened, grew solid. It was no shadow; it was something substantial. It defined itself more and more. Then suddenly, at the top of the line, and about on a level with the face of the clock, he saw a round luminous disc gazing steadily at him. It was a human eye, looking straight into his own, pressed there against the spy-hole [...]. Then, like someone moving out of deep shadow into light, he saw the figure of a man come sliding sideways into view, a whitish face following the eye, and the perpendicular line he had first observed broadening out and developing into the complete figure of a human being.¹⁷

¹⁶ H. G. Wells, *The Invisible Man: A Grotesque Romance* (London: Dent, 1995), p. 81.

¹⁷ Algernon Blackwood, 'A Victim of Higher Space', in *The Complete John Silence Stories*, ed. by S. T. Joshi (New York: Dover, 1998), pp. 230–46 (p. 233).

Both Blackwood's 'Victim' and Wells's Griffin are desperate to return to full corporeal form. The invisible female protagonist of Hinton's *Stella*, however, prefers incorporeality. She describes to Hugh Churton how the scientist Michael Graham had succeeded in making her invisible:

'But he found out how to alter the coefficient of refraction of the body. He made my coefficient equal to one.'
 'But why should he?'
 'Don't you see, Hugh, being is being for others. Michael used to say that true life begins with giving up.'¹⁸

The absenting of the corporeal self in the Hintonian vision of higher space is an act of pure altruism. For the egotists Griffin and the Victim, the loss of the corporeal self, the spatial body of the three-dimensional space, is terrifying: selfishness is self-fullness; altruism is an act of spatial voiding, of occupying no space, even that of one's own body. Mind, however, remains for Griffin, Stella, and the Victim.

Corporeal inversion and dissolution caused by exposure to higher-dimensional spaces provoke polarized representations, but responses to the implications of permeability for the body tend towards unanimity. The possibilities of co-presence are uncomfortable at best. When the strictures of Kantian space are violated in 'The Plattner Story' Wells uses typographic emphasis to make his point:

Then came a thing that made him shout aloud, and awoke his stunned faculties to instant activity. *Two of the boys, gesticulating, walked one after the other clean through him!* Neither manifested the slightest consciousness of his presence. It is difficult to imagine the sensation he felt. (p. 202)

The material permeability and spatial mobility leading to co-presence could be positively conceived in formal terms, however.

Co-presence/possession and *style indirect libre*

At its plainest level, narrative voice is central to the constituted spatiality of a text. In the broadest terms, a first-person narrative locates the reader in a determinate subjective space while the third-person allows for greater

¹⁸ C. H. Hinton, *Stella and an Unfinished Communication: Studies in the Unseen* (London: Swan Sonnenschein, 1895), p. 35.

mobility of perspective. Such mobility finds its apogee in the intermediate voice that uses aspects of both first- and third-person, a style that is most frequently termed free indirect discourse after the French, *style indirect libre*. In the English language, this technique was frequently evident in the nineteenth-century novel but was both practised and theorized most comprehensively by Henry James. Gérard Genette writes that ‘for post-Jamesian partisans of the mimetic novel (and for James himself)’ it was ‘the best narrative form’.¹⁹

Genette reads James’s theory of the novel as a resurgence of the Platonic struggle between ‘pure narrative’ and mimesis:

We know how this contrast [...] abruptly surged forth again in novel theory in the United States and England at the end of the nineteenth century and the beginning of the twentieth, with Henry James and his disciples, in the barely transposed terms of showing vs. telling. (p. 163)

Genette considers the ‘focalization’ of narration and reads Jamesian technique as a ‘fixed internal focalization’, maintaining its centre in one character as opposed to moving between many (variable) or many at the same time (multiple). (p. 189)

Dorrit Cohn terms the technique ‘narrated monologue’ and offers a clear description of how it is achieved: the dropping of the third-person verbs of narration, or thought, as the passage proceeds. Cohn makes the clear point that this technique fuses both thought and vision:

The narrated monologue — in contrast to the quoted monologue — suppresses all marks of quotation that set it off from the narration, and this self-effacement can be achieved most perfectly in a milieu where the narrative presentation adheres most consistently to a figural perspective, shaping the entire fictional world as an uninterrupted *vision avec*. The narrated monologue itself, however, is not *vision avec*, but what we might call *pensé avec*: here the coincidence of perspectives is compounded by a consonance of voices, with the language of

¹⁹ Gérard Genette, *Narrative Discourse: An Essay in Method*, trans. by Jane E. Lewin (Ithaca: Cornell University Press, 1983), p. 168.

the text momentarily resonating with the language of the figural mind.²⁰

As an example of the internal spatiality of narrative perspective, free indirect discourse might owe much to the kinds of mobility offered by a fourth dimension. The narrated monologue has a ‘now-you-see-it, now-you-don’t quality’ due to its commingling of ‘narratorial and figural language’ (Cohn, p. 109). Cohn extends its ambiguity to the presentation of character and context. Where narration imposes a boundary between the internal and external, the narrated monologue ‘can reflect sites and happenings even as they show a character reflecting on these sites and happenings’ (p. 132). This is a technique that uses language to produce spatial effects, to manoeuvre the readerly consciousness into communion with the figural consciousness, and allows a perspective that is at the same time single and double, a liminal, intermediate voice. Cohn describes this as ‘imperceptibly integrating mental reactions into the neural-objective report of actions, scenes, and spoken words’ (p. 115).

The permeability of the physical body, its susceptibility to higher-spatial possession, occurs as the spatial aspects of novelistic voice, or mood, tend towards a similar form of co-location. This is perfectly exemplified in Henry James’s use of the metaphor of possession: ‘A beautiful infatuation this, always, I think, the intensity of the creative effort to get into the skin of the creature; the act of personal possession of one being by another at its completest.’²¹

In the preface to *What Maisie Knew* (1897), James declared himself ‘addicted to seeing “through” — one thing through another, accordingly, and still other things through that’ (*Art of the Novel*, pp. 153–54). James’s ‘through’ might not map directly onto Stead’s ‘throughth’; it might not necessarily be permeability but vicariance, seeing via. This is, nevertheless, a position of mobility, as illustrated by the preceding sentence, describing ‘his love, when it is a question of a picture, of anything that makes for proportion and perspective, that contributes to a view of all the dimensions’ (p. 153). James’s metaphor of ‘the house of fiction’, at the window of which stands the artist, has become a critical commonplace: ‘The spreading field, the human scene, is the “choice of subject”; the pierced aperture, either broad or balconied or slit-like and low-browed, is

²⁰ Dorrit Cohn, *Transparent Minds: Narrative Modes for Presenting Consciousness in Fiction* (Princeton: Princeton University Press, 1978), p. 111.

²¹ Henry James, *The Art of the Novel: Critical Prefaces*, ed. by Richard P. Blackmur (New York: Charles Scribner’s Sons, 1934), p. 37.

the “literary form” (*Art of the Novel*, p. 37). James was bringing ‘all the dimensions’ into play in his mobility around the form.

That James figures possession as an essential aspect of his theory of the novel alerts us to his concern with spatiality and responsiveness to the imagined spatiality of the period. To get into the skin of the character is to occupy the same space, primarily. Only then can the consciousness be shared: it cannot be shared from above, or below, or to the side. Thinking the same thoughts is part of the matter but seeing with the same eyes, hearing with the same ears, sharing the sensible experience of the subjectivity is crucial: spatial identity and identification, the co-location made possible by higher-dimensional theories. James figured the fourth dimension in its occulted form, as evidenced by Fleeda’s remark in *The Spoils of Poynton* (1896) when asked to name the mysterious aura of Mrs Gereth’s collection of *objets*: ‘It’s a kind of fourth dimension. It’s a presence, a perfume, a touch. It’s a soul, a story, a life. There’s ever so much more here than you and I.’²²

The co-location of consciousnesses also maps onto the well-rehearsed supernatural trope of possession elsewhere. In George du Maurier’s *The Martian* (1897), the hero Barty Josselin is possessed by a Martian intelligence that writes through him, an interplanetary fictional equivalent of the ‘communicating intelligences’ of many an automatically produced occult text. Martia gives Barty written instructions: ‘First of all, I will write out for you a list of books which you must study whenever you feel I’m inside you — and this more for me than for yourself.’²³ Martia produces best-selling works in two languages, the most celebrated of which is ‘La quatrième Dimension in French’. Possession makes Barty an authority on the very higher space that legitimizes the concept of co-location.

The Inheritors (1901), a collaboration between Joseph Conrad and Ford Madox Hueffer, centred on the machinations of the Dimensionists, a race of humanoids from the fourth dimension. The narrator Granger meets, and finds himself irresistibly attracted towards, a Dimensionist woman who assumes the identity of his sister. It emerges that not only can she read minds — ‘she seemed to divine my thoughts, to be aware of their

²² Henry James, *The Spoils of Poynton*, ed. by Bernard Richards (Oxford: Oxford University Press, 1982), p. 172.

²³ George du Maurier, *The Martian* (London: Harper, 1897), p. 361.

very wording' — but that she can control them.²⁴ The co-presence of possession is, after all, very like co-presence of reader and text.

Conclusion

The fourth dimension emerged as an algebraic speculation but was soon translated into the language of projective geometry; in order to explain the concept as demonstrated in projective geometry, it was then translated into the rhetorical construction of an analogy; from both analogy and projective geometry physical theses were speculated, concealing the linguistic construction of rhetoric, the descriptive function of geometry; these physical theses were hypostatized, assumed concrete rather than abstract; both the hypostatized versions of these theses and their speculative forebears became once again linguistic constructions, as allegories or metaphors in fiction.

After n -dimensional space, writers were operating in a universe at least partially post-Kantian. The set of practices for producing space in the nineteenth-century novel identified by Isobel Armstrong was recalibrated to account for the post-Kantian space of n -dimensions. In such space the physical bodies of fictional subjectivities were turned inside out, their consciousnesses doubled, and Henry James's obsession with the possession of his characters can be read as a symptom of this altered spatial imaginary. The reproduction of new spatial ideas at the level of content in *fin-de-siècle* fiction was clear, but responses were accented with ambivalence over potential implications. At the level of technique, while more abstract and diffuse, such ideas were profoundly nourishing.

²⁴ Joseph Conrad and Ford Madox Hueffer, *The Inheritors* (London: Dent, 1923), p. 11.