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ROUNDTABLE: VICTORIAN GLASSWORLDS

Introduction

Josephine McDonagh

Isobel, Armstrong, *Victorian Glassworlds: Glass Culture and the Imagination 1830–1880* (Oxford: Oxford University Press, 2008)

In keeping with *JVC*'s mission to respond to innovation within Victorian scholarship, we turn our attention to Isobel Armstrong's major new book on the history and phenomenology of glass in the nineteenth century. Over her long career, Armstrong has earned a reputation as one of the most original and influential literary and cultural critics in Britain today. Her exhaustively researched and boldly argued studies have shaped the field for the current generation of scholars. Her work on Victorian poetry—especially the anthology *Nineteenth-Century Women Poets* (co-edited with Joseph Bristow and Cath Sharrock, Oxford: Clarendon Press, 1996) and her monograph *Victorian Poetry: Poetry, Poetics, and Politics* (London: Routledge, 1993)—has entirely revised the map of nineteenth-century poetry. *The Radical Aesthetic* (Oxford: Basil Blackwell, 2000), a complex and wide-ranging examination of the turn to the anti-aesthetic in theoretical writing, anticipates more recent critical preoccupations, including the 'poetics of emotion', and questions about the possibility of a democratic aesthetic. In *Victorian Glassworlds: Glass Culture and the Imagination 1830–1880*, Armstrong considers the nineteenth century as 'the era of public glass'. A genuinely interdisciplinary inquiry, it brings together an eclectic range of themes associated with the production and consumption of glass, the kinds of visual cultures that the Victorian fascination for glass produced, and the forms of mediation that glass culture generated. *JVC* has invited four scholars—a historian of technology and an art historian, a literary and a cultural critic—to respond to the book with a view to assessing its impact in different fields.

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Roundtable: Victorian Glassworlds

Victorian ‘Ways of Seeing’?

Chris Otter

What was distinctive about perception in the nineteenth century? Can one speak of Victorian ‘ways of seeing’? How do such ‘ways of seeing’ relate to material, architectural and technological developments? To answer such weighty questions, Isobel Armstrong examines the history of a single thing—glass. Between 1830 and 1880, she argues, mass-produced glass, stretched and fashioned into plates, mirrors and lenses, insinuated itself between viewing subject and viewed world. By turns transparent, reflective, and refractive, glass produced visual experiences quite distinct from anything before or after. This epochal specificity is captured in numerous phrases, like ‘scopic period,’ ‘glass consciousness,’ ‘glass culture,’ or, simply, ‘Victorian glassworlds.’¹ Glass provided a “*medium and barrier*” through which people saw, and about which they thought and wrote (7). This seeing, thinking and writing touched seemingly every aspect of Victorian culture, from political economy to evolution, astronomy to the Grotesque.

Although these glassworlds were fragmented and multiple, they were connected by the material presence of glass itself, which Armstrong takes very seriously as a tangible thing (361–2). She does exactly what Arjun Appadurai once suggested scholars do: she ‘follow[s] the things themselves.’² The result is a spectacular and original form of historical phenomenology, a multifaceted, complex meditation on what Bill Brown recently described as that which is ‘excessive in objects...their force as a sensuous presence or as a metaphysical presence.’³ *Victorian Glassworlds* is an extended, joyous study of phenomenological excess—emotional, poetic, ocular, psychological, bodily—shaped by a bold, playful, historicist reading of Merleau-Ponty and Heidegger. Yet it is an excess usually shaped by the brittle, blistered medium of glass itself.

Armstrong’s investigations begin with the physical elements of glass culture, its panes, mirrors, microscopes and magic lanterns. Glassworlds are material, and materially produced. She revealingly analyses the laborious production of glass, and particularly the physical work of glass-blowing. The specificity of this mode of production situates Victorian glass culture within a particular history of labour and political economy. From its moment of creation, glass contained residues of glassblowers’ breath. In return, they ingested splinters of glass. Object and subject slightly, disturbingly interpenetrated. Glassblowers, Armstrong reminds us, worked in infernal heat. It is unsurprising, she notes, that Marx used glass factories as exemplars

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of capitalist relations of production in *Capital*.(37) She never lets us forget that the “sensuous force” of glass was itself a product of painful labour.

Here I address two of these physical elements: the *window* and the *lens*. While Armstrong’s analyses of windows and glass architecture propel the reader far into the Victorian imagination, she notes that ‘ways of seeing were historically constrained by the technological necessities of the vertical window, the dominant domestic form for over a hundred years in Europe.’(115) The recurring ‘window moment’ in literature, for example, was structured by the shape of the window itself: oblong and vertical.(124, 131) But this structuration was never straightforwardly deterministic, as if the ‘window moment’ was somehow isomorphous to the window itself. With the iconic Crystal Palace, she explores the commentaries of observers like Lothar Bucher, whom she describes as ‘seeing in crystal, not seeing through it . . . [the Crystal Palace] is an autotelic world apart, a space existing outside the norms of solids, weight, volume, and shadow.’(152) Here was sensuous force in abundance: 293,000 windows generated an experience of radical excess, making the Crystal Palace a disorienting, shimmering, emotive *thing* rather than a mere utilitarian *object*.⁴ This experience could intensify into disarming transparency, of a ‘shadowless, limpid, indefinable medium . . . like living in an underwater world.’(152) Historical experience, and the reflections upon this experience, was occurring within a rapidly changing technological, architectural, and perceptual field.

Armstrong’s compelling study of the Victorian conservatory is more conventional. John Loudon and Joseph Paxton, Victorian Britain’s two great glass architects, are cast as rivals: the democratic Loudon, carefully constructing salubrious vitreous environments, is pitted against the more opportunist Paxton, using glass for display and spectacle, most famously in the Crystal Palace itself. She is equally strong in demonstrating how the mass-production of glass generated architectural fantasies.⁵ Paxton himself proposed a ten-mile crystal girdle around London, while the *Builder* suggested reassembling the Crystal Palace as a thousand-foot high public watchtower.(156–8) Surveillance was, however, never rendered so explicit: such aerial views remained limited to those fortunate enough to take balloon trips over London.

Armstrong’s architectural glassworlds were structured, then, by glass. Her analyses playfully traverse the physical, physiological and psychic pathways linking vitreous to literary and poetic forms. There are points, however, when these nineteenth-century vitreous forms appear

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to resonate more with the twenty-first century critical imagination than anything demonstrably Victorian. The panopticon, for example, plays an occasional, rather haunting role. She argues that “the Crystal Palace was a descendant of panoptical technology,” and refers to the “staring panoptical sockets of windows” in *Bleak House*.(117, 128) Here, the wonderfully suggestive relationships between form, experience and language break apart, since the discursive and phenomenological dimensions of her analysis no longer bear any historical relationship with the material forms of the Victorian period. The Crystal Palace was neither formally nor functionally panoptic: its structure generated countless partial views of people and things. Seldom, perhaps, was vision so blocked, unregulated and chaotic. Panopticism, as I have argued elsewhere, is a basically useless analytic tool with which to investigate the relationships between built form, perception and power during the nineteenth century.⁶ The panopticon’s residual presence is all the more anomalous given Armstrong’s sustained reluctance to collapse various practices, from factory organization to optical technologies, into a disciplinary meta-narrative. It is also puzzling given her brilliantly critical reading of Benjamin, who provokes reflection on glass culture but is (convincingly) accused of collapsing nineteenth and twentieth-century glass cultures into a singular, seamless modernity.(163)

This critique can be furthered. Part Two of the book, ‘Perspectives of the Glass Panel,’ appears generally rather blind to the geographical and spatial specificity of glassworlds. When Armstrong argues that “the glassing of London was complete by the mid-century,” she is not making a naively empirical claim, of course, but she refuses to really explicate, or analyse, the uneven spatial development of glass culture.(133) Her “glass consciousness” was materially, phenomenologically and psychically rooted in London’s West End, not the East. Indeed, despite occasional forays beyond London, this is a very metropolitan book. Glass consciousness was arguably not nearly so pervasive outside of the wealthier parts of the capital. In remote rural areas its underlying material framework might altogether disappear. Here is a description of a completely glassless Cornish window, taken from the 1884–5 *Royal Commission on the Housing of the Working Classes*: ‘one window had not a pane of glass in it, and as a substitute for the glass there were nine hats, and rotten bags, and old straw, and so on, and it was in a very miserable condition.’⁷ Other modes of imagination, doubtless, were called forth by the sensuous force of these hats and rotten bags. For the observer, the *glassless* world was unsettling. The inhabitants’ sensory world is rather harder to excavate, although it

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surely lacked the structuring force of glass. We can speak of Victorian ways of seeing, but we must always define *where* such seeing took place, and *who* was doing it. Armstrong explicates tensions within glassworlds, but there were surely tensions between glassworlds and worlds where glass was peripheral or entirely absent. References to non-glassworlds, or anti-glassworlds, like London rookeries, Tom-all-Alones, or the dirty windows of Krook and Jellyby, are rare. (139–41, 246–8) Some consideration of how the undoubtedly new glassworlds within Victorian cities (particularly London) intersected with more extensive tracts of less vitreous space would have added some geographical texture to the book.

Armstrong suspends detailed discussion of perception itself in part three, “Lens-Made Images: Optical Toys and Philosophical Instruments.” For me, this was the book’s highlight: indeed, it was often quite brilliant. The lens, she notes, “made light mobile, enabling light to accomplish its own transformations by making non mimetic images out of itself.”(253) Armstrong examines three families of lens-machines: those transferring images from one place to another (like the magic lantern), those which distorted or magnified images (like the microscope), and those creating the illusion of motion (like the phenakistiscope). The visual encounters with such machines generated questions about images, their mediation, and knowledge in general. Although she mentions Jonathan Crary by name only once, this part of *Victorian Glassworlds* appears as a sympathetic yet powerful critique of his work.⁸ Armstrong is keen to wrest these lenticular glassworlds from the clutches of Crary’s more disciplinary framework, which depicts vision as captured and over-determined by a new universe of visual toys and instruments.

Here, Armstrong’s adherence to the materiality of optical devices and their sensuous force pays rich dividends. The stereoscope, for example, rendered tangible the physiological and psychological work of assembling an image that did not exist “out there” in reality. It demonstrated the perspectival nature of visual perception. She observes that Helmholtz, a major figure in Crary’s work, thought the stereoscope a liberating instrument rather than a source of ‘technologized visibility.’ (339) Similarly, Armstrong argues that optical contraptions simulating movement generated a rich dialectic of freedom and determination: the freedom to look at something which would have absolutely inescapable physiological and psychological effects on the act of seeing itself. The eye is at liberty to gaze in multiple directions, yet ‘consent[s]... *involuntarily* to the “direct” pulsation of movement.’(350) This supple dance of freedom and

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constraint captures the ambivalence of nineteenth-century visual experience, without reducing it to a disciplinary model. It is probably correct that Crary's argument in *Suspensions of Perception*, while more ostentatiously Foucauldian, ultimately approximates to something similar. Armstrong, however, says it rather more clearly, largely because of the more material and phenomenological nature of her analysis.

Armstrong furthers this line of inquiry in her section on the 'Dissolving *View*' and the '*Dissolving View*' (292–309). In the former, a viewed object gradually dissipates, revealing its ontological evanescence. This was true of apparently frivolous devices like the magic lantern, but also of those least artificial, most seemingly permanent objects, stars. Armstrong connects visual concerns surrounding magic lanterns to debates on the nature of nebulae. Anxieties over perception extended to the limits of cosmic space. The view of a nebula revealed vast clusters of stars which were in the process of becoming. Nebulae 'displayed the universe in a condition of uneven synchronic exchange, decay and renovation, aggregation and separation coexisting' (299).

Fixed stars not only ceased to be fixed in space, but also in time: like everything else, they were born and they died.

Such galactic instability was mirrored by equally unsettling questions relating to astronomical observation. John Herschel struggled to comprehend what he saw through his telescope, and acknowledged his own optical limitations: 'in the denser portions of the nebula, so bright is the diffused light, that it is extremely difficult to fix attention on such minute points . . . glimpses are often caught and lost again, in a manner which renders it impossible to say positively that a *star* has or has not been seen' (305). The stable astronomical view was *dissolving*. Verifying what had been seen, and recording it, involved double-checking, and the painstaking construction of composite images, vividly reproduced in Armstrong's text. The dialectic of the dissolving *view/dissolving view*, linking the glacial becoming of the nebula to tedious astronomical labours, epitomised the existential instability felt by those Victorians who peered longest and most closely through glass. Armstrong contributes here to a genealogy of a key twentieth-century concept: relativity. Wisely, she prefers to use the nineteenth-century astronomer's term of choice, *parallax*. 'The universe of parallax,' she concludes, 'provoked a range of reaction, from celebratory skepticism to anxiety and fury, but it created the terms of controversy.' (309)

Armstrong's discussion of perception, language, and imagination, then, is situated in a distinct phase of material history. Rather like

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Lynda Nead's *Victorian Babylon*, cultural experience is reconnected with the material world without being determined by it in any straightforwardly "materialist" way.⁹ Nead examines a wider variety of artifacts: gaslight, streets, sewers. Armstrong, meanwhile, explores one substance, but in greater depth. Her history is not, obviously, exhaustive, and notable areas of Victorian 'glass culture' are not addressed, like the public aquarium. Glass was also, clearly, not the only distinctive thing about the visual history of the period 1830–1880: scientific and aesthetic ideas about vision changed, as did numerous other technologies, most notably those providing illumination. In conclusion, I will return to my opening questions: what was distinctive about perception in Victorian Britain? Can we speak of Victorian 'ways of seeing'? Does 1830–1880 form a 'scopic period,' and, if so, what kind of period is it?

One way to answer this question is to ask what preceded, and what followed, this period of glass consciousness? Jonathan Crary calls the preceding era the 'classical period,' the defining figure of which was the camera obscura, a dark chamber pierced by an aperture, through which light streamed, forming an image.¹⁰ 'Modern' perception, for Crary, involved abandoning this stable, static figure and 'ground[ing] the truth of vision in the density and materiality of the body.'¹¹ Perception became subjective, relative, and fleshy. Although Armstrong devotes little time to this break between classical and modern, she does acknowledge its existence. The stereoscope is central to Crary's modern visual regime, and Armstrong agrees, noting how it invites the viewer to 'give up the classical gaze's authority . . . [and] question the stable relation between subject and object.'(341) While I would not dispute the perceptual significance of the stereoscope, I would question the existence of a 'classical period' of vision. It implies a period when vision was stabilised by denying the mediating force of the eye, which was replaced, quite dramatically, by a subjective theory of vision where perception was inescapably assembled in the eyes and brain. There was, undoubtedly, a slow drift towards more subjective models of vision in the nineteenth century, but this began well before 1800, while older models lingered alongside newer ones.

Armstrong's supple, dialectical analysis allows for more contestation and ambivalence than Crary's, and she laudably refuses to give her glassworlds phase the Foucauldian epithet 'the modern period.' Her use of the term 'classical gaze,' however, suggests some commitment to an epistemic model of history, which her emphasis on the relativising and subjectivising of nineteenth-century perception reinforces. I would be interested to know how an epistemic model of perceptual change

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relates to Armstrong's more material-phenomenological model. Her glassworlds appeared when glass panels, mirrors and lenses became mass produced: this is *material* determination "in the last instance," however sophisticated. Her argument provides a more material and less absolute, model of perceptual change than Crary's. This commitment to a material break becomes even clearer at the book's end, when Armstrong argues that 'the decisive shift from lens to screen (behind which there is nothing), from trace-filled transparency to the traceless presence of sheer glass, from material made by breath or cut by hand to a computer-controlled material floated on metal or gas, has generated another set of questions than those addressed in this book.' (361)

Victorian glassworlds, then, were brought into being by mass production and the proliferation of glass structures and devices. They terminated when clearer, machine-made glass became available, which was fashioned into new forms, most significantly the screen. Like Crary, Armstrong does not follow visual perception into the twentieth century. Unlike Crary, however, Armstrong is adamant that nineteenth-century modes of perception transform into something else. But what? Armstrong's work does not imply that the twentieth century experienced a radical recrudescence of 'objective' vision. Rather, the historical trajectory she describes so wonderfully in *Victorian Glassworlds* implies that substantial mutations could take place *within* subjective or relativised perception. The rise of cinema and television created a new relationship with glass. When (or if) glass architecture became banal, for example, the experience of it would change. The development of scientific instruments like bubble chambers and electron microscopes would produce different perceptual and epistemological conundrums.¹² These are truly 'another set of questions', and one can only hope that future authors tackle them with something approaching the same combination of learning, analytic rigor and sheer invention as Armstrong.

(Ohio State University)

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Email: otter.4@osu.edu

Endnotes

1. Isobel Armstrong, *Victorian Glassworlds: Glass Culture and the Imagination 1830–1880* (Oxford: Oxford University Press, 2008), 3, 1, 13. All subsequent references will be by page number parenthetically in text.
2. Arjun Appadurai (ed.), *The Social Life of Things: Commodities in Cultural Perspective* (Cambridge: Cambridge University Press, 1988), 5.
3. Bill Brown, 'Thing Theory,' in Brown (ed.) *Things* (Chicago: University of Chicago Press, 2004), 5.

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4. On the thing/object distinction, which owes much to Heidegger, see Brown, 'Thing Theory,' 5.
5. On urban fantasy, see Frank Mort, 'Fantasies of Metropolitan Life: Planning London in the 1940s,' *Journal of British Studies* 43:1, January 2004, 120–151.
6. Chris Otter, *The Victorian Eye: A Political History of Light and Vision in Britain, 1800–1910* (Chicago: University of Chicago Press, 2008), 3–5.
7. William Hawke, in *Royal Commission on the Housing of the Working Classes. Volume II. Minutes of Evidence and Appendix as to England and Wales* (London: Eyre and Spottiswoode, 1885), 614.
8. Jonathan Crary, *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century* (Cambridge, Mass: MIT Press, 1990), and *Suspensions of Perception: Attention, Spectacle, and Modern Culture* (Cambridge, Mass: MIT Press, 1999).
9. Lynda Nead, *Victorian Babylon: People, Streets, and Images in Nineteenth-Century London* (New Haven, CT: Yale University Press, 2000).
10. On the camera obscura, see Crary, *Techniques*, 26–66. See also Michel Foucault, *The Order of Things: An Archaeology of the Human Sciences* (New York: Routledge, 1974).
11. Crary, *Suspensions of Perception*, 11–12.
12. See, for example, Peter Galison, *Image and Logic: A Material Culture of Microphysics* (Chicago: University of Chicago Press, 1997).

Artefacts and Aesthetics

Marcia Pointon

This is a courageous book in every way. While it tackles issues of taxonomy, it defies taxonomic categorisation. Crossing disciplinary boundaries, moving rapidly from the minutiae of the lives of glass workers to the large picture of the Great Exhibition, from the insightful snatch of a verse by Christina Rossetti to the solemnity of a Royal Commission report, Armstrong carries her reader along with verve and a strong sense of her own fascination with the relationships between the production of glass and its impact on the ways in which people understood and articulated their environment. It is constantly thought-provoking and I found myself while reading what is a deliberately digressive account following avenues of connected ideas: when reading about the 'fairy' child on the disproportionate lily leaves (174) I thought immediately of the art of Richard Dadd whose extraordinary fairy paintings were executed during his period as an inmate of Bedlam. The construction of the book with its unusual combination of discursive passages, critical commentaries, observations and gobbets of text, reminded me of shards of glass. I shall never walk among the reflective surfaces of the recent buildings in our urban environment without thinking of this book. By and large, Armstrong deals deftly with the ambiguities and contradictions posed

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by the trans-valuation of material into artefacts whether imagined or actual. Perhaps inevitably there are instances where she seems to miss the point, possibly by focusing too closely on the textual at the expense of the material. On Cinderella's glass slipper, the point is surely not that 'in the nineteenth century its origins in inorganic debris, sand, would be known'(207), but that people were, and still are, able to occlude what they know in the interests of maintaining a fantasy that is life-affirming. Thus it is that since the 1780s, when diamonds were demonstrated to be carbon, the notion that diamonds are adamantine (the Greek word for them is *adamas*) still holds and the 'diamonds are forever' tag remains unchallenged.

In the strengths of this book lie also its weaknesses. Armstrong's single-minded mission through a vast amount of documentary evidence leads to claims for glass that cannot, I suggest, always be easily upheld. What is true of the glass industry was surely true also of ceramics and certain kinds of metalwork. The micro histories presented are compelling reading but without comparative data it is impossible for the reader to judge whether what is described is unique to glass. To be sure, we are dealing here with representations but, for example, without knowing the authorship of the article of 1859 that Armstrong claims testifies to 'the extraordinary range of linguistic register available to the glassworker' (76) this is impossible to judge. I wonder whether the window was *the* (sic) disputed space of the century' (7)? I wonder whether it can be described as a 'space' at all. What of the House of Commons, the chancel of the church (hugely disputed among ecclesiologists), the street, the common . . . and so on? Factory tourism, of which Armstrong gives a vivid and extremely well documented account in the first part of the book, was well established in the eighteenth century. Armstrong offers convincing evidence that glass was special in the Victorian period but for myself I yearned for at least a brief acknowledgement of other hugely significant glass culture moments in the pre-industrial history of western Europe: the Medieval cathedral builders who understood the crucial role glass could play in mediating between the material and spiritual worlds, the Venetian glass makers of the sixteenth century and the introduction of mirrors into everyday life, the rococo world of reflections as manifest in Versailles's Hall of Mirrors. Of course, the Victorians wrote about it more but that is to a great extent a consequence of the expansion of print. Given that the Victorian period is a great age of church construction it is a pity that almost nothing is said about stained and painted glass.

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I found myself asking whose culture this is that is so amply narrated and analysed? Glass is, as Armstrong's book suggests, a matter of class. In many ways the answer is clear: it is the people's culture, whatever that may signify. The seductiveness of glass was experienced by theatre-goers, tourists, shoppers, exhibition visitors, and lovers of scientific toys. I recently met an elderly Italian whose job in service in a grand palazzo had been to clean and polish the chandeliers daily. We are reminded of the arduous work of glass blowers but not of the armies of domestic glass polishers. It is worth quoting from the 1911 *Encyclopaedia Britannica* where we read that 'owing to the sacrifice of form to prismatic brilliance cut-glass gradually lost its artistic value'. The distinction between aesthetic form and effect was a real one for the period but it tends to be lost when designers are largely absent from the account and when users—the cooks who developed coloured jellies and blancmanges to show off the cut glass dishes—are invisible.

One of Armstrong's strengths is her erudition and her command not only of technology but also of philosophy. But does it really get us anywhere to be bounced in one eighteen line paragraph from a contemporary reviewer called 'Voltaire' to Cruikshank, Heidegger, Merleau-Ponty and Descartes (218)? The use of quotation marks often baffled me. In the first sentence of a section titled 'Colour is Dialectical' (273) (and incidentally there is not a single colour plate anywhere in the book) we have 'official' [science] and 'law' [of complementary colours] but I am unclear whether this is Armstrong or David Brewster who is acknowledged for the longer quote that follows. Three pages later, I assume 'privileged moment' is the author but three lines later are three more phrases in quotes which I might hazard a guess relate to Ruskin who is earlier acknowledged but it can only be a guess. These are things that perhaps a better copy editor might have helped to sort out. Such a one might also have eradicated some of the intrusive parenthetical remarks. I will take one example from page 191 that also demonstrates how frustratingly cluttered this text is with page numbers and brackets: "Brotherhood—'God hath made them [the nations] all of one blood' (p.349) (race again- this phrasing recalls anti-slavery rhetoric)—education . . .".

In a recent review article, 'Image Matters', Ludmilla Jordanova makes a cogent plea for historians to take their visual sources as seriously as their verbal.¹ It will be easy to dismiss what I am going to say here as the predictable carping of an art historian so let me preface it by stating unreservedly that I applaud both the way Armstrong weaves between visual and verbal sources and the plenitude of imagery

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in her book. Some of these criticisms must be laid at the door of her publisher who should have known better. Out of eighty-eight illustrations, only four are actual non-architectural artefacts made of glass. Figure 50, a fragment of which is used on the dust jacket in colour, is so badly cropped that it is impossible to imagine what the form of the object is. Would any literary historian and critic of Armstrong's distinction omit the beginning and end of a stanza of Browning's poetry without explanation, cutting off in mid line? Figure 15 is not indexed under either Henry Cole or Richard Redgrave (two giants of design in the period). Facing page 253, chapter 10, appears an image with no caption and we have to wait until chapter 14, page 346 where it is repeated to find out what it is. No dimensions are given for any of the illustrations. Thus on page 276–7 we have a Turner at quarter page that actually measures 79 × 79 cm facing two magic lantern slides at half page that must be in actuality very much smaller. We have long known through the work of Celina Fox that the *Illustrated London News* had teams of wood engravers adapting existing blocks whenever necessity arose. There is very heavy recourse to the *ILN* in this book, yet nowhere is the visual rhetoric of these images addressed. We cannot assume that these images represent any kind of unmediated truth any more than do the verbal texts adduced here. One example will suffice. Figure 8 is a plate from the *ILN* showing glass blowers. It accompanies a long passage on the production of Cylindar glass but nowhere is this image discussed or even referred to. When I look at this I see three figures that are portrayed within the visual rhetorical strategies established in eighteenth-century England in the work of artists like Joseph Wright of Derby exploiting the heroism of labour and the drama of artificial light. Tim Barringer's *Men at Work* (2005) is listed in the bibliography but its important arguments about nineteenth-century imagery of labour seem not to have impinged.

Armstrong vividly evokes and explains the layers of historical and cultural significance generated by the fragility of glass, its propensity to shatter and, indeed, to wound. This is the other side of the coin of its beauty. Chapter 4 opens with two glass manufacturers holding up wine glasses before the members of the 1868 Royal Commission on Trades. I find this a moving moment – the men with their intimate physical knowledge of the material artefact and the men who have probably never noticed the qualities of what they hold in their hands as they raise a toast in their clubs or at their dinner tables. Here the haptic is all. It is for the men of trade to persuade the legislators of the physical characteristics of glass artefacts. There is a marvellous description on page 79 of beautiful glass ornaments being carried in

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a procession. Unlike print sources, the survival of material artefacts is a matter of chance. But this is recent past and objects like these do survive; the Victoria and Albert Museum glass gallery has some on display and many more in its readily accessible store. I longed for Armstrong to engage with the fragile physicality of these things, the verbal representation of which she so eloquently invokes. All that I read and saw in this book raised, like a spectre, the three dimensional material particularity of glass like some promised gift, described, invoked, but ultimately withheld.

(University of Manchester)

DOI: 10.3366/E1355550209000630

Email: marcia.pointon@freedom255.com

Endnotes

1. *The Historical Journal*, 51:3 (2008) 777–91.

Poetics and Perspectives

Clare Pettitt

In a keynote speech she delivered this summer entitled ‘The Poverty of Historicism,’ Catherine Belsey suggested that better attention to literary form might open a way out of the new historicist aporia. Her claim was a familiar one: that new historicism has tended to shortchange the literary by pushing historical data into literary texts without allowing those texts to speak back in their own language. Read carefully, through their mixed and heterogeneous forms, literary texts can show up the inadequacies of monolithic models of culture and grand narratives of history.¹ The ‘return to form’ has been repeatedly announced in literary studies, and a brief look at conferences planned for 2009 in the UK suggests that form is indeed becoming a newly urgent preoccupation. Recent books from major nineteenth-century scholars show that Victorian Studies is participating in this ‘turn’ or ‘return’ too: Angela Leighton’s *On Form: Poetry, Aestheticism and the Legacy of a Word* (2008); Simon Jarvis’s *Wordsworth’s Philosophic Song* (2007); and Kirsty Blair’s *Victorian Poetry and the Culture of the Heart* (2006) are three works which have given us new equipments for thinking about the agency of the literary imagination.

Perhaps surprisingly, I want to write about Armstrong’s extraordinary achievement, *Glassworlds*, as part of this trajectory towards rethinking what form does. For while her book is replete—or to put it

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more glassily – glittering and sparkling – with fascinating material, any splinter of which could provide ample material for this brief review, in a longer perspective I think this book points the ways towards a ‘poetics’ which brings cultural history and formalism together in a way which is truly innovative and could prove extremely powerful in the future of our field. Like many of my colleagues, in my own work I have been wrestling with the thorny problems of how to bring the material world into dialogue with the world of the imagination. Or, to put it more precisely, how to reveal the dialogue that is constantly underway between the material world and the world of the imagination in the nineteenth century. In *Patent Inventions: Intellectual Property and the Victorian Novel* (2004), I re-entered a specifically Victorian machine culture that shared a rhetorical space with literary culture – through thinking about the ways in which concepts of wonder, inspiration and instrumentality clustered around both. Armstrong has done something similar but she has reached much further and pushed much harder upon one nineteenth-century material: glass.

In taking as her subject glass – the vitreous, transparent matter which can enclose us as it reveals us, harm us, keep us out, or let us see – she has struck upon a material which is also a metaphor. As this wonderful and difficult book makes clear, glass was a material-metaphor whose multivalence was much more clearly visible to the Victorians than it is, perhaps, to us. Armstrong tells us – a point to which I shall return – that it was only with the advent of modernism in the twentieth century that glass disappeared into ‘transparency.’ Until then it was highly visible. The brilliance of this book is in the way in which Armstrong dares to linger and think in front of the glass in an extended and difficult philosophical way rather than reaching – as so many cultural histories do – immediately towards a firm diagnosis. Instead of going on a ‘glass-spotting’ spree through the texts of the Victorian canon, as a lesser scholar might have been tempted to do, Armstrong works first with glass itself, using the ‘thing’ to think. This extended and strenuous thinking amasses in surprising ways as the book unspools. Armstrong’s formalist agenda is explicit right at the start in the dazzling introduction called ‘The Poetics of Transparency’ which sets up a range of ‘theses’ (‘Breath and Sand’; ‘Looking Through, Looking On’; ‘Glass Spaces, Glass Images’; and ‘Pleasures, Violence’) but subsequent chapters slow down and think through the process and the politics of the manufacture of glass, a ‘primitive process [that] frankly shocks’(29); a case study of the Chance factory at Spon Lane, Smethwick, which introduced Cylinder glass to Britain; and the ‘grammar’ of window-breaking in the

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politically unstable 1830s and 1840s when rioting crowds smashed the glass in the houses of the rich because ‘in breaking a window...you were fundamentally challenging [its owner’s] perceived right to his *perspective*, and insisting there are other perspectives, from the other side of the window’(68). It moves on restlessly to mirrors—to the looking-glass curtain at the Coburg Theatre—and back to windows: ‘[o]pposites meet at the window. It is the place where contradictions are posed, where the boundary is unsafe’ (115). Then we move to urban spaces, shop windows, utopian plans for light-filled glass thoroughfares through the darkest reaches of London, glasshouses, greenhouses, cucumber frames and—of course—the inexorable path from these to the ‘shadowless, limpid, indefinable medium’(152) of the 1851 Great Exhibition. The Crystal Palace in Hyde Park is considered in terms of its adjustment of the space-time continuum: ‘[t]he synchronous existence of species from different areas of the world [in the conservatory] presaged the simultaneous presence of commodities under one roof in 1851’ (179) and the Great Exhibition was ‘at the centre of the debates and conflicts of Victorian modernism’ (202). Later sections of the book examine the glass that was under glass in the Crystal Palace—the glass replica of the famous Koh-i-noor diamond; the display of ‘pathologically’ overdecorated Bohemian glass, a grand boudoir mirror with two porcelain nymphs perched on the frame admiring themselves in its glass; and then turns to glass encounters in Charlotte Brontë’s *Villette* and Dickens’s *Bleak House*. The final part of the book turns to the lens and lens-made images and suggests ways in which its popular and its ‘philosophical’ uses were crucially connected in projecting an ‘ungrounded world’ (254) for the first time in history.

Armstrong has long been one of the subtlest critics of ‘Victorian Modernism.’ Fifteen years ago, she wrote: ‘Victorian modernism sees itself as new but it does not, like twentieth-century modernism, conceive itself in terms of a radical break with the past. Victorian modernism, as it emerges in its poetics, describes itself as belonging to a condition of crisis which has emerged directly from economic and cultural change... to be modern was to be overwhelmingly secondary.’² This new book focuses the precision of her model of Victorian modernity through the lens of glass. She—gently, but rightly—points out how ahistorical we have been in our reading of Walter Benjamin’s Arcades Project, reminding us how deeply ‘[h]e is embedded in glass culture himself’(165) and that he ‘elided nineteenth- and twentieth-century glass culture. He saw nineteenth-century modernism ... in continuity with a catastrophic modernism

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of the present.’(163) Thinking through glass helps her to refine her earlier point about the condition of modernity being a ‘secondary’ one.

‘A nineteenth-century novel without a window is inconceivable’ (124) Armstrong tells us, adding that windows ‘also stand for the entire narratological structure of the novel form at this time’ (132): a structure which is underpinned by a series of interactive encounters between self and beholder. Her thesis in *Victorian Poetry* about secondariness as the central condition of modernity has shifted its focus from chronology to spatiality. Now it is not enough merely to feel late; to be modern in the mid nineteenth century was also to be caught up in a powerful social dynamic of mediated seeing. Glass provides a third term—a barrier which divides, connects and creates the other two. ‘The novel calls for what Lefebvre termed a “triadic” reading, where opposition is grasped for itself and in its relations’.(132) Not at all the transparent medium of the early twentieth century, Victorian glass asserted its presence through ‘a secondary world of reflection.’ (12) ‘Transparency posited an oppositional world, not invisible mediation but marks on the surface, scratches, fingerprints. Miniscule impurities and bubbles of air, internal impediments to vision, signified and *created* internal contradictions.’(14) Brilliantly, Armstrong uses glass to summon up for us a refreshingly original sense of what it might have been to be modern in the 1850s. Less obsessed with the new than with the extending distance from the ‘old’; troubled by a loss of easy social identification but not wholly alienated, merely—like the narrator of Poe’s 1840 story *The Man of the Crowd*—watching intently through the glass. And through this description of the experience of mid-nineteenth-century modernity, she throws brilliant new light on why Lucy Snowe or Esther Summerson, or David Copperfield or Dorothea Brooke do not sweep us along in a swelling stream of consciousness, but rather are delivered to us through a text that mediates and reflects their experiences back onto itself, so that they remain at once intimate and oddly distant from us: ‘this movement between absolute transparent medium and barrier *is* one of the forms of nineteenth-century modernism’ (13) explains Armstrong. At a stroke, she sweeps away the old-fashioned but persistent idea that ‘Victorian Modernism’ is merely a callow and incomplete version of high modernism—a version that has not yet freed itself from the old forms, or has not yet fought its way out of the ‘clutter’ of realism. In fact, as Armstrong makes gloriously clear, the struggle between transparency and occlusion in Victorian writing is not straining towards its *telos* in *Ulysess* or *To the Lighthouse*, but is itself a wholly new and complex double (if not triple) form.

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Alex Potts has written in a similarly revelatory way of the modernity of Canova's neo-classical sculpture in the early nineteenth century, and he shares something with Armstrong in the way in which he describes the vividly embodied physical and perceptual responses that are activated by viewing the plastic world.³ Armstrong writes movingly of the traces left by the breath of the blower upon Victorian glass, and her discussion of glass remains scrupulously 'embodied' throughout the book: she utterly refuses to separate glass into a category of 'technology' which would separate it from its human users, makers, shapers and breakers. What seems initially an instinctual response of the author to a substance that she clearly loves develops through the book into a devastating critique of some of the current versions of 'thing theory' and the history of technology which enforce a rigid binarism between 'thing' and 'person.' Indeed, it is to the body that Armstrong turns in one of the most fascinating passages of this compendious work.

'Can I not have a time-pieced but a naked woman must sprawl upon it?' asked a writer in *Blackwood's Magazine*, surveying the household objects on display at the Great Exhibition.⁴ The ghastly taste of many of the exhibits has most often been posthumously enjoyed as 'kitsch' or simply derided by critics of 1851. But Armstrong thinks much harder than this about the way the human body and the manufactured object are prosthetically connected in these objects. Armstrong sees how the melding of the human form with the object creates a kind of *grotesquerie*: 'the torsions and broken lines that distort form, the mixture of styles that characterise Victorian objects, all these come under the rubric of the Grotesque' (217) she says. This is partly Ruskin's violent grotesque of modernity: 'a distorted form of the sublime . . . [A] perceptual overload that defeats thought and stuns the mind with the incommensurable – a modern phenomenon.' (250) But Armstrong is less of a cultural pessimist than Ruskin. She sees in the Victorian grotesque an energy and struggle and oppositionality in play that – rather than defeating thought – is itself a way of thinking.

From these Victorian objects Armstrong starts to theorise what she terms the 'double body'. She turns to Victorian versions of Cinderella's glass slipper, chandeliers and Osler's glass fountain at the 1851 Exhibition, to lead us into a discussion of the grotesque which takes us further towards 'glass form' and its potency for thinking harder and better about the Victorian period; 'This double body is the constituent element of the Grotesque. It marks the violation of categories between species of animate life, and between animate life and things.' This is where Armstrong really puts pressure on received ideas of form, and

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shows how much more complicated our vocabulary needs to become if we want to be able to understand the shape of the experience of Victorian life better: '[s]imultaneously a humanly worked artefact and a product of the vegetable, mineral, or animal world, the Grotesque engages with the repercussions of that violation of categories across biological life and inorganic matter. The energies of a taxonomical anarchy that literally incorporates the body, confounding it with the materials it works upon, account for a disturbed exhilaration [...] A radical throwing of relations with things into question comes about' (215–17). For myself, this is the crux of *Glassworlds* because it frees form even from the fixity of hybridity into a serial work of making and unmaking.

Some 'Thing Theory' and much of what comes under the general heading of 'the history of technology' tends to break the experiential loop by separating off the 'technology' or the 'manufactured artefact' from the human body. Armstrong knows that this is not how we actually experience technology or things—and therefore this is not an adequate paradigm. Things do not stand apart from us: they mediate our relationships—even our relationships with ourselves—much more fully than that: 'Dolf Sternberger has argued that the categories of the "Natural" and the "Artificial" were themselves transformed in the nineteenth century as "the blend of the technological and the *organic*" and the interchange between men and machines grew more insistent.' (195–6) This intersection of being and making led to the extraordinary outpouring of mixed artistic forms in this period— 'a form of Victorian surrealism' (218) as Armstrong puts it later, in which the body and the thing are in constant flux. A restoration of the 'mutually interactive relations' (218) between bodies and things would fully restore the kinetic and dynamic qualities which we so often miss when we read Victorian forms back through the high modernism of the early twentieth century.

Armstrong makes it possible for us to begin to construe technique and the processes of manufacture not as 'form' but as a mode of historical knowledge. In other words, if we could break free of the formalism of thinking about 'form', and extend our vocabulary and our imaginative reach, we would be able to see again all the multitudes of reflections which are playing and dancing in the art and literature of the period, like all the little aquatic creatures visible only under the lens of a Victorian microscope in a drop of London water.

Our lazy desire to freeze our ancestors into poses of impossible immobility is only too clear in the way in which we tend to reach for ready-made conceptualisations of literary and artistic form. We often

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miss the collisions, the violence and the parallax of Victorian writing and artistic representation more generally. What structures so much Victorian modernism is the struggle and restless mediation between positions as texts search for a space from which it might be possible to understand the rapidly changing relations of 'labour, political radicalism, the "free" human subject, spectacle in an industrial society, the politics of evolution in astronomy and under the microscope' (362).

'Glass is never neutral'(117) says Armstrong. *Glassworlds* teaches us never to confuse transparency with lack. Transparency is an idea-thing: a glass-thought.

(Kings College, London)

DOI: 10.3366/E1355550209000642

Email: clare.pettitt@kcl.ac.uk

Endnotes

1. Catherine Belsey, Keynote Speech at 'Representations' the inaugural conference of the International Society for Cultural History, University of Ghent, August 27–31 2008. (Belsey 'The Poverty of Historicism, Wednesday 27 August, 17.00–18.00) See: <http://www.abdn.ac.uk/isch/documents/conferencebooklet.pdf>.
2. *Victorian Poetry: Poetry, Poetics and Politics* (1993), p.3.
3. Alex Potts, *The Sculptural Imagination: Figurative, Modernist, Minimalist* (New Haven and London: Yale University Press, 2000).
4. *Blackwood's Magazine* 70 (1851), p. 147.

Reflections and Distortions

Bruce Robbins

Like Walter Benjamin, who seems to be the guiding spirit behind this dazzlingly rich and rewarding volume, Isobel Armstrong takes the risk of fixing her gaze on a set of the nineteenth century's mundane, taken-for-granted objects, confident that they can be made to reveal the period's most interesting secrets. Glass, the humble substance out of which windows, mirrors, and roofs, lenses, fountains, and chandeliers are fashioned, is not an obvious site, conceptually speaking, on which to unite these objects. Depending on what one wants them to say, the fact that they are all made out of glass is perhaps not the most important thing about them. This is more or less what Theodor Adorno chided Benjamin for in their correspondence of the 1930s. For Adorno, Benjamin's fascination with technology in the Arcades Project had gotten stuck somewhere between magic and positivism. Benjamin offered too much analogy, too little explanation. In the very

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act of analysing the fetishism of commodities, he fell into a sort of fetishism himself. On the other hand, who can be sorry that Benjamin didn't fully listen or submit? The result, however fragmentary both in its form and in its conceptualisation, stands as one of the most brilliant and influential pieces of cultural criticism written in the twentieth century. If the question remains open of how exactly to understand the connections between culture and industrial capitalism, or the material and the spiritual, that seems a price well worth paying.

Armstrong does not attribute value to glass as such. She attributes value to glass as it was seen, she argues, by the nineteenth century. The point is that in this period it *was* seen, as a massive resistant substance in its own right, at the same time that it was seen through, or enjoyed for its transparency. The nineteenth-century eye pauses on glass, obstructed; and that pause, which allows for the consciousness of distortion and indeed generates self-conscious 'reflection,' defines what must be called, though Armstrong understandably hesitates to use the term, the period's greatness. When *Victorian Glassworlds* speaks of 'nineteenth-century modernism,' it breaks modernism down into two centuries, nineteenth and twentieth, and it expresses a clear preference for the earlier version: 'Twentieth-century modernism sloughs off the contradictions and doubled meanings collecting round the conservatory in favour of a free monologism. Pure transitivity, so that glass becomes an invisible medium, is the ideal of architectural modernism, an abstract place to pass *through*' (162). The goal seems to be to revalue the Victorians as bravely wrestling with contradictions on which their successors would unfortunately lose their grasp. I won't speak for scholars of twentieth-century modernism, but it seems quite likely they would not rush to see their period in quite this contradiction-starved way. After all, in the business of criticism, contradiction is a form of cultural capital. The subjective sign of contradiction is 'anxiety,' a word that Armstrong uses a good deal. One would not want to dispute that the Victorians felt a good deal of anxiety. But I for one am not a bit uneasy with the notion of anxiety as the currency in which to count up the ethico-aesthetic value of our authors and texts. For what it's worth, this periodisation also confines Armstrong's argument geographically. Marshall Berman, to whom Armstrong attributes the phrase 'nineteenth-century modernism' (13), was not talking about Britain but about France in particular, where modernism is generally accepted to be a nineteenth-century phenomenon, and about Europe in general. The same of course holds for Benjamin.

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What is it exactly that one manages to see when one pauses to look at glass? For Armstrong, one distinctive thing about glass in this period is that it is still marked with the physical breath of the glass blower. This seems to be an allegory, but I'm not sure exactly of what. To congratulate nineteenth-century glass on showing the marks of human breath or the smudges of a workman's dirty fingers or other impurities that cannot be done away with is not to say that it exposes, say, the truth of alienated labour. Something of the physical process of production may indeed remain visible, but not the characteristic social relations behind that process. And as far as perception is concerned ('Far from being Benjamin's traceless entity, glass is marked with the complexities of perception itself' [204]), it's again not apparent that we needed glass or its particular Victorian incarnations in order to learn that our perception of the world is not immediate, but mediated in all sorts of ways, for example by our ethical and cognitive and racial categories – that we see through a glass darkly, as it were. It's an old thought.

The democratisation of what had been a scarce and expensive commodity is a familiar narrative trajectory, and one that always runs the risk of aggrandising that commodity's agency at the expense of other factors. (Why *was* the tax on glass lifted after 1845?) A different sort of materialism might see more of the period's deep truth in, for example, the wearing of optical lenses, trying to measure the effects as eyeglasses became more democratically available. Or it might put glass into a mix with other commodities. Benjamin himself argued that the nineteenth century was as innovative in its use of iron as in its use of glass; it was not either substance in itself but rather the linkage of the two (for example in the architecture of the "greenhouse") that was distinctive about the period's re-fashioning of space. So many technological innovations were happening more or less at once that singling out one, like glass, looks a bit self-serving, especially when the claims are grand. "The novel is founded," Armstrong writes, "on glass culture" (132). This is a strong claim to stake on the insight that at crucial moments characters often look through windows. It's true of course that railway stations used glass, but they also took advantage of newly available sources of artificial light. You could make as good a case for gas as for glass. One thinks too of Woolf's observation that the marriage of the Carlyles would have been different if their house had possessed indoor plumbing.

Among the book's most satisfying sections are its wonderfully pithy analysis of the 'factory visit' genre, followed by an annotated tour of glass factory tours, and its visionary effort to give political articulation

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to the feelings of those who broke the windows of the rich. But there are many such sections. How brilliant to think of *Bleak House* as an anti-Exhibition novel! And how fascinating to learn, say, that one handbook for the Great Exhibition noted that glass beads had been used for the purchase of slaves (226), or that ‘public competitions for the design of the Exhibition building and the London sewers were taking place at the same time’ (246). Ditto for the quite technical discussions of microscopes and telescopes, kaleidoscopes and other vision-oriented magical toys, and the effects of all on Victorian common sense. Armstrong is not shy about getting seriously into the optics. She makes you want to become an intellectual omnivore, but with high culinary standards.

In this sense, of course, she will again remind readers of Benjamin. And her judgment of Benjamin can perhaps be applied to herself as well. ‘Benjamin’s formidable standing as the analyst of glass culture in the Arcades project can disguise the extent to which he is embedded in it’ (165). This is not something one could rationally regret even if it had not led to such extraordinary critical insight. It is simply what it means to live in history dialectically understood. Does anyone really know at this point in time what it would look like to defetishise a commodity?

(Columbia University)
DOI: 10.3366/E1355550209000654
Email: bwr2001@columbia.edu

Isobel Armstrong writes in response

What do Authors Want?

What more could an author want than attentive reading and an understanding of the book’s project? I am more than grateful to the writers of these four searching and detailed responses to *Victorian Glassworlds*, for their thought and care, and the energy of their thinking.

It was in considering how to do justice to these varied and suggestive critiques that I found myself wanting to adapt Freud’s famous question by asking—what do authors want? The greed of writerly narcissism (can anyone be wholly exempt from it?), probably rivals the contradictory and inordinate demands that Freud’s question attributed to women. Readerly empathy but writerly mastery, the temptation

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to have the last word... But these readers have created a genuine opportunity to reply. An author's best hope is that a book calls out that intellectual surprise—or even irritation—which creates a perspective wholly unanticipated by her or him, so that the book is returned to the writer in a new form that calls in its turn for re-thinking. These discussions challenge by offering four clusters of questions. I respond to these general questions rather than to points of detail, though I recognise the importance of such detailed correctives.¹ The first cluster is about the status of 'glass culture' as an organising category and the historiographical problems that follow—whose culture? Another, related, cluster concerns the periodisation of glass culture and the accounts of visuality that might determine its limits. Thirdly, there is the problematic dichotomy between materiality and text. Lastly, there is the question of form and what this means. All these readings spurred me to think of glassworld texts I did not include in the book.

Before I tackle these questions there is one persistent niggle crossing these essays that I should clear up. Of course it is a wholly artificial procedure to isolate one material, glass, as a formative substance in Victorian culture, but that was exactly the point. Of course there are other candidates for reading the fundamental structural components of the period—iron, gas, sewers, and, as Anne McClintock has brilliantly demonstrated, soap. If hegemonic rivalry among technologies seems the point of the book I have misled readers. I wanted to see what questions would emerge by experimentally detaching one important material, glass, from others in this period. I wagered that questions unique to the material—historical, theoretical, political, phenomenological—would arise. I was also fascinated by the problem of divining and defining the sensuous and aesthetic experience of glass in the nineteenth century and how one set about exploring historical and passional experience now lost to us; fascinated, in a word, by how glass gets into a text, visual or verbal. Chris Otter is right to remind us that the spread of glass was uneven and dialectically tied to darkness, unlit spaces, and the Victorian underground. (David L. Pike has written a whole book about this dark underground).² This was something Charlotte Brontë's precocious early writings recognised with extraordinary insight. Glasstown or Verdopolis, the capital of her fantasy land, Angria, is founded on dark, hollowed out caverns where gang labour and body snatching goes on underground. She grasped that glass hid work and violence as much as it exposed it. This issue is connected with the first cluster of questions, the status of 'glass culture'.

*Roundtable: Victorian Glassworlds**Problem One. Glass Culture and Historiography*

I think that the theoretical thinking that went into *Victorian Glassworlds* is very much embedded in it rather than explicit, so it's good to have the opportunity to say more. The book was in the making before theorised accounts of material culture and 'thing' theory emerged. These caught up with me but I addressed rather different questions that issue in different problems. These are intimated by points made by both Chris Otter and Marcia Pointon. 'We can speak of Victorian ways of seeing, but we must always define *where* such seeing took place, and *who* was doing it' (Otter); 'I found myself asking whose culture this is that is so amply narrated and analysed? Glass is... a matter of class' (Pointon). The arduous labour of cleaning glass, and who did it, she says, is ignored. A related and very important point is made by Bruce Robbins. 'To congratulate nineteenth-century glass on showing the marks of human breath... that cannot be done away with is not to say that it exposes, say, the truth of alienated labour.' These critiques go to the heart of the book's method and its difficulties for me. There's always an intense strain between writing a history of glass and a phenomenology of it, between writing about glass and society and glass culture. I felt this strain all the time. Are they fundamentally incompatible genres of scholarship and thought or can they be reconciled? They seem at one and the same time to be irreconcilable and to collapse into one another. What sort of history is such a hybrid or is it any sort of history at all?

Glassworlds solves this problem, or rather, attempts to, by rooting the first section of its three parts in the straightforward specifics of empirical and archival history—*who* made glass, *how*, and *where*, and what were the relations of power governing it.³ The second part of the book switches genres noticeably. I was not writing a history of design and designers, a diachronic account of glass, or mapping the spread of glass and its use in geosociological terms, but trying to think through the implications of a virtually new material and its meanings. I took what I thought of as key contexts for these meanings and developed them in a series of case histories that were self-evidently non-inclusive. The histories of oppression or exclusion that Pointon and Otter point to were, I hoped, sufficiently implicit in such a way that they could be developed by others. I was wary, perhaps too wary, of writing what I think of as accusatory history. Glass brings such a weight of suffering with it that it is easy to swamp a narrative with its peculiar forms of oppression. I decided to confine a history of suffering to the making of glass in part one. But, as Pointon points

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out, it is everywhere: Mrs Beeton recommended cleaning port from by decanters with brown paper and hydrochloric acid and gave these labour-intensive instructions for cleaning.

Glass is a beautiful and most fragile article: hence it requires great care in washing. A perfectly clean wooden bowl is best for this operation, one for moderately hot and another for cold water. Wash the glasses well in the first and rinse them in the second, and turn them down on a linen cloth folded two or three times, to drain for a few minutes. When sufficiently drained, wipe them with a cloth and polish with a finer one, doing so tenderly and carefully. Accidents will happen; but nothing discredits a servant in the drawing-room more than continual reports of breakages, which, of course, must reach that region.⁴

Above I have described a procedure, though, and need to consider the issue of whose culture glass culture was more precisely. Clearly, the differential experience of glass in the nineteenth century will have depended on whether you cleaned, made, used it, worked with it (as a glazier), struck about it (as, not only glass makers, but the workers on the Crystal Palace did), drank from it in glassy gin palaces or high society dinner parties, or broke it (in riots). Different perspectives on glass proliferated. But I believe there would always *be* a perspective. And one group might experience more than one, possibly contradictory, perspective at any one time. In other words, there would be a core experience of glass even among those, described by Otter, deprived of it, a sort of negative glass culture. Walter Benjamin attempted to theorise such trans-social, class-crossing experiences by expressing commonality, not through the terms of class hierarchy, but deliberately inclusively by talking of 'the collective'. It enabled him to speak of a cultural imaginary, and, in the Arcades Project, to speak psychoanalytically of the 'subconscious' of a culture, substituting the 'dream' for ideology.⁵

These claims are fraught. They are huge, attributing a universal 'dream', with all its Freudian contradictions, not only to a collective but to its artefacts. They cut across, still, our usual categories. Nevertheless, it is worth thinking through what kinds of analysis are released by Benjamin's formulations and how they help to describe and problematise common if fractured cultural experience. Part Two of *Glassworlds* made a start on this, but there's a long way to go. Someone who achieved this with consummate understanding, though, was Christina Rossetti. In *Time Flies*, following her account of glass as arrested motion, sexually understood as shaped from within by

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breath (4), she describes, meditating on aesthetic and social exclusion, two magnificent ancient vases that had oxidised in a variety of hues, luxury objects that now belonged to high culture and its privileged archaeology.⁶ One day she finds a crude, common bottle abandoned in a ditch. It too had oxidised, its dim iridescence displaying in muted form the subtle rainbow colours with which time and chemical process had endowed the ancient vases. (It's worth remembering that glass culture encompasses containers, implements and instruments as well as translucent buildings, as glass superseded other materials.) This is not an allegory: it's a Benjaminian dialectical image; glass culture is available to different classes through different artefacts that are radically shaped by privilege and history. Yet there is a common element, the aesthetic experience of glass – and Rossetti's point is that it is demeaning to deny such experience to the user of the common bottle.

Another brief example goes some way to meeting Robbins's astute observation that the glass artefact does not necessarily carry 'the truth of alienated labour' in its material form. This is *the* question. Fox Talbot included in his *The Pencil of Nature* (1844) a photograph of shelves of glass dishes, probably the first photograph of glass in the world, and presumably ransacked from the pantries of his mansion. It took hours of exposure, because of the spectral nature of glass. Looking at this, an artefactual image reproducing artefacts, would mean different things to Fox Talbot's confraternity of scientists, to his maids and cooks, to the observer newly astonished by the advent of the photograph as a new form. But I am with Marx here, who saw labour 'crystallised' in the artefact, and with Benjamin, who saw in the artefact an indication of the culture's 'subconscious'. The very spectrality of these dishes marks them with the meaning of breath. The cutting they have undergone incises the body into the glass body. They prompt, to a much greater degree than china perhaps, some recognition or question as to how these fragile, transparent shells came into being. I do believe that an artefact carries the characteristic social relations of its production within itself, even though more research and theory is needed to pursue this question. These artefacts represent both pain and beauty and their contradictions. It is not the anxiety of contradiction that matters but the contradiction itself. Contradiction makes one think. Robbins's helpfully perverse misreading here, assuming that I attribute cultural capital simply to a state of anxiety, as if to experience anxiety alone is enough, prompts me to clarify.

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Problem Two. Ways of Seeing

This may be a subset of the first cluster of questions but raises some rather different issues. The temporal limits of glass culture and its periodisation are a particular concern of Otter and Robbins. I define the high moment of glass culture rather narrowly from 1830–1880, though of course it stretches before and after. ‘Can one speak of Victorian “ways of seeing”?’ Otter asks, and is there a distinctive form of visual perception or scopic experience in this period associated with the window and the lens? Following from this he asks, importantly, how an epistemic model of perceptual change consorts with the predominantly material-phenomenological model of the book. Robbins is sceptical of this periodisation altogether, remarking that to claim the formative effect of the window on the nineteenth-century novel on the grounds ‘that at crucial moments characters often look through windows’ is excessive. He rightly thinks that I oversimplify the epistemologies of modernism. Otter’s theoretical question detects the strain of the generic transitions I have already mentioned, the problem of writing empirical history and a poetics, which is almost always the endpoint of phenomenology. Nevertheless, I would like, eclectically, to keep both epistemological and phenomenological models in play, though conscious that they are not isomorphic. I am not sure that one can pin down ways of seeing in any period, though Kate Flint has done some remarkable work in this direction, but one can certainly ascertain theories of seeing.⁷ Epistemologies of vision were themselves phenomenological. I would say that the period is marked by theories in transition, from the picture on the retina to the optic nerve stimulus theories explored by Helmholtz, from a dualistic theory that I perhaps too rashly term ‘classical’, to a subject generated visuality, and by an overdetermined emphasis on visuality itself. Another way of defining the limits of glass culture is through the increasing detachment of the body from forms of production, from breath to the miles of sheet glass produced on rollers in massive sheds. There may be some inter relation between these changes and changes in visual theory. They require the work of a Serret. One position I share completely with Otter and which I seem not to have made clear, is a repudiation of Foucauldian-derived, monologic, disciplinary accounts of vision. The panoptic model of surveillance has done real harm to thinking about the nineteenth century.

Robbins is quite right to say that I simplify modernist positions. I do so provocatively on the grounds that modernism, which has had

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the monopoly of complexity in relation to the nineteenth century so far (there is still a Whig theory of modernism about) can look after itself. For lack of space I abandoned a chapter in rough draft that might have made this simplification less peremptory. The physics and optics at work in nineteenth-century astronomy migrate into psychoanalysis as structural models of relationship in the twentieth century, particularly in the work of Lacan and in his odd dialogue with Merleau-Ponty. I tried to figure out what this transposition implied for both nineteenth-century and modernist thinking. I think, though, turning to the window, to whose prominence Robbins objects, that the window *is* both a marker of high glass culture and an indicator of an epistemological break between modernism and its nineteenth-century precursors. It signifies a mediating moment that is completely absent from the eighteenth-century novel. It is a moment poised between groundedness and ungroundedness, the safety of looking from a guaranteed perspective and the unsafety of a location that precipitates the viewer into the outside. Virginia Woolf's *To the Lighthouse*, marking the rupture of the First World War, wonderfully recapitulates and historicises the window experience we find in Dickens, Eliot and Charlotte Brontë in a kind of aubade to the nineteenth century, pushing the window moment towards the unsafe experience it partly intimates in the nineteenth century. Part 1, 'The Window' introduces the pre-war narrative. As the central experience of the dinner party and the celebrated *boef en daube* takes place, the party is reflected in the window's reflection superimposed on the flux and dissolution of the waves. After this the window no longer has a structural narratological role in this text and this arguably marks a structural change in the modernist novel.

Problem Three. Materiality versus Textuality

Pointon argues that *Glassworlds* overvalues the textual, stressing this at the expense of the material. 'I longed for Armstrong to engage with the fragile physicality of these things', she writes of the objects in the glass gallery at the Victoria and Albert Museum. I am not quite sure of her meaning here. I think that for her the presence of glass in literary and documentary texts takes unwonted precedence in the book: she wants more description and discussion of specific glass artefacts. For instance, taken from the (overcrowded) V&A glass gallery she would want to see detailed accounts of, say, the differences between the intricate and slightly frenetic lacy design stamped on cheap industrialised pressed glass, created through elaborate moulds,

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giving it a curious, muted opacity, and the glittering facets of cut glass. This, like the group of Richardson's glass apparently exhibited in 1851 (Figure 53), so deeply incised that it is carved rather than cut, fissured with pattern working against pattern, attempting to create a three dimensional surface, like the geometries of a series of snowflakes, or a complex geological crystal form, could not be more different from pressed glass. Different people made and bought these vessels. Pointon's is a fair objection. As it happens, I reviewed the V & A glass gallery for the *TLS* when it reopened. I own that I missed the opportunity Pointon describes, partly because, in contrast to the Potts mirror (234–9) I could not easily see how to develop the narrative of a case study round individual glass artefacts, though I did look at the glassiness of glass vessels (266–7). The book will have done its work if it prompts someone to do this detailed description. However, whether one is describing a specific glass flask or chandelier, the material object always needs the mediation of language, always has to be read, always becomes a text, always has a language of its own that requires textual interpretation. Hence my preoccupation with mediation. Both the act of mediation glass performs as medium and barrier, and the mediating act of the observer, are at the heart of glass culture. Much more could be done on the theory and practice of such double mediation, as my brief references in the book to Bruno Latour suggest. As Robbins comments, 'It's an old thought', but every generation re-makes and re-thinks forms of mediation afresh, and the re-making of mediation is particularly problematic for glass. Pointon ends by remarking that the three dimensional particularity of glass eludes the book like a spectre. The word 'spectre' is instructive, I think. Glass *is* spectral. Its translucency is its shape. Its being is made from light and reflection. It's *there* by virtue of its elusiveness. Its aura is the hardest thing to describe in language.

Problem Four: Form

Claire Pettitt's long and imaginative discussion raises rather different questions from those in the other pieces, or rather, she approaches the questions of historiography, material culture, and textuality through the lens of form and 'the agency of the literary imagination'. Though she, too, is preoccupied with the periodisation of Victorian modernism, her emphasis is on how one might use 'the 'thing' to think', and with the creation of a philosophical poetics 'which brings cultural history and formalism together'. I am grateful for the inwardness of her writing. Her reading of form is not prescriptive or rule bound but a

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re-thinking of what form does. For her form is something discovered anew in every critical act that seeks to relate the sensuous world of material objects to the world of thought and imagination – and I would add, language – in which it exists. It's a give and take between the artefact that *takes* form and the linguistic acts that *give* it form; and then a matter of recasting this historical language in one's own, a double problem of form. She speaks of 'wrestling' with this problem, and indeed it will always be a matter of wrestling because every artefact comes into form uniquely – there are no formulas. (Perhaps this is why Steve Connor once playfully described my work as full of 's' words, like 'struggle' and 'strenuous'.) Pettitt's interest in form leads her to consider the grotesque in Victorian culture as a genuine form, both literary and material, a 'way of thinking', not a kind of malformation or excrescence. She also understands that in the grotesque the human body enters into matter, thought and language. Despite some wonderful work already done on the category of the Grotesque, I am sure that more needs to be done on this term.⁸

I confess that I pondered on *Glassworlds* as a formalist work, partly because the dangers of the new formalism are that it elevates an uncontroversial fact – after all, whoever could be *against* form? – into a privileged principle that does not recognise a constant dialectic between form and its others. Then I remembered that my first book was titled, following Blake's use of the term rather than Schiller's, *Language as Living Form in Nineteenth-Century Poetry*. Living form is the way to go.

Finally, a word about the form of *Glassworlds* itself. I use many kinds of text from Victorian print culture, but overwhelmingly and flagrantly I refer to novels and to poems, particularly to poems. This is because the literary text registers and shapes cultural experience with the greatest complexity and subtlety, a complexity that fends off the need to consume a text for its meaning alone; a familiar enough position, but one that had formal implications for the book. Because I was limited to specific word limits, I found that it was impossible to include extended discussions of texts – I omitted separate sections on Tennyson's 'The Lady of Shalott' and Dante Gabriel Rossetti's beautiful 'Rose Mary', for instance, poems that meditate on the mirror and the lens, and many others. Instead I hit upon the method of what I think of as collaging, juxtaposing a series of short quotations from different texts without comment, or with the absolute minimum of commentary. Collaging allows texts to speak and speak to one another, and juxtaposition provides a new context which creates new meanings. I thought of these as a new form of writing, comprising

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lyric insets within the text. They also dramatise the different arenas of glass culture. Sometimes, as in the Introduction, words from a range of printed sources could be laid against one another – for instance, a periodical aimed at the lower middle classes, Marx, Christina Rossetti (3–4) – and given, I hope, living form.

So what *do* authors want? The invaluable opportunity to think again, to think and explain, has been the greatest gift of this response. I thank the four writers for their work of reading once again. That ignominious need of authors for the last word has been overcome, for together they have shown where more work needs to be done, and created the beginnings of a debate.

(Birkbeck College, University of London)

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Email: isobel.armstrong@logic-net.co.uk

Endnotes

1. Though I pass over many points of detail, Marcia Pointon's complaint about the omission of the measurements of images is well taken. She's right, of course. Trades Union emblems, for instance, are effectively huge, detailed poster designs, something that is not registered by the illustrations (80–81).
2. David L. Pike, *Metropolis on the Styx. The Underworlds of Modern Urban Culture, 1800–2001* (Ithaca and London: Cornell University Press, 2007).
3. That's where Bruce Robbins will find his answer to the question of the glass tax (note 16, 369).
4. Paragraph 2197 from Chapter 41 of *Household Management* (1861), possibly a later interpolation.
5. Walter Benjamin, *The Arcades Project*, trans. Howard Eiland and Kevin McLaughlin (Cambridge, Mass., and London: The Belknap Press of Harvard University Press, 1999) p.4.
6. Christina Rossetti, *Time Flies: A Reading Diary* (London: Society for Promoting Christian Knowledge, 1885).
7. Kate Flint, *The Victorians and the Visual Imagination* (New York: Cambridge University Press, 2000).
8. See David Amigoni et al, eds, *Victorian Culture and the Idea of the Grotesque* (Aldershot: Ashgate, 1999).