ROMANTIC FRAMES OF MIND:
VISION AND SYMPATHY IN
BRITISH NOVELS OF THE NINETEENTH CENTURY

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ABSTRACT

Catherine Jane (Kate) Massie: Romantic Frames of Mind:
Vision and Sympathy in British Novels of the Nineteenth Century
(Under the direction of Joseph Viscomi)

Victorians in Britain believed, following the Romantics, that vision facilitated sympathy, or knowledge of others' inner lives. Yet humanities scholars have often associated Victorian art or literature that presents vision as a mode of knowledge or avenue for curiosity with spectacle or discipline: the disruption of sympathy. This dissertation challenges this narrative to argue that many Victorian artists and writers experimented with the visual to aid sympathy (empathy, in modern parlance). It focuses on Jane Austen's *Pride and Prejudice*, Charlotte Brontë's *Villette*, George Eliot's *Middlemarch*, and Rudyard Kipling's *Kim*, paired with visual art (paintings or photographs) or visual experiences (seeing through microscopes, visiting a museum, looking through an album), to suggest that these novels variously exemplify fiction's power to help audiences *see* from other points of view. The novels function as cognitive artifacts that practice audiences in perspective change. This analysis clarifies the depth of the Romantic aesthetic revolution and suggests the return of its ideas in modern cognitive science.

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CHAPTER 1: INTRODUCTION

Dorothy Wordsworth's journal entry for the 20th of January in 1798 begins with simple yet poetic observations:

> The green paths down the hill-sides are channels for streams. The young wheat is streaked by silver lines of water running between the ridges, the sheep are gathered together on the slopes. After the wet dark days, the country seems more populous. It peoples itself in the sunbeams. (1)

She kept the journal presumably for reasons similar to those that have motivated countless others to write in journals or diaries: to remember events, to register thoughts, to explore and understand personal daily experience, and as was increasingly true across the late eighteenth and nineteenth centuries in Britain, to record direct perception and subjective experience of the natural world. These short lines show Dorothy translating into words her keen visual observations of that world – the hill-sides, the wheat, the water, the sheep – and transforming them subtly into aesthetic perception via delightful metaphor: "the country peoples itself in the sunbeams."

Soon after she wrote, Dorothy's brother William transcribed these four sentences into his own journal, and decades later he also seems to have transformed them into lines of poetry.[1] When Dorothy wrote, she used her journal as a memory device to record her observations and as a tool to aid her thoughts about what she had noticed. The journal's efficacy as a help not merely to memory but also perhaps to continued thought appears most strikingly in that verb metaphor turning vision into aesthetics. When William copied her lines and returned to them years later, he likewise used his journal as an auxiliary to memory and finally, after a greater delay, as an aid to continued thought.

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[1] In the 1971 edition of the *Journals of Dorothy Wordsworth*, editor Mary Moorman writes in a footnote to the excerpt quoted above that Dorothy composed these lines and William copied them into the Alfoxden Notebook; he later used similar phrases in a fragment of poetry that can be found on page 341 of volume V in Ernest de Sélincourt's *The Poetical Works of William Wordsworth*. In a footnote to the same excerpt in a 2002 edition of the journals (*The Grasmere and Alfoxden Journals*), Pamela Woof admits the possibility

But this was still not the endpoint in the usefulness of Dorothy's words, or the service of her journal to thought. Though the original handwritten version has been lost, copies beginning with her brother's ensured the journal's persistence through the intervening centuries, during which her words have been read and analyzed for countless reasons by countless individuals. As primary text and as supporting evidence in multitudes of secondary texts, the journal has become part of the accumulated stock of knowledge about the era now called Romantic. In one measure of modern influence, a Google search for "Alfoxden Journal" in late 2012 turns up more than 8,000 results, including links to full-text digital copies, scholarly print editions, critical reviews of those editions, reference works, and crib notes for students. The same search in Google Scholar produces nearly 500 entries, many of which represent scholarly arguments that reference the journal. Dorothy's text did not aid only her memory and assist only her thought, just as it did not prompt only her brother's: it has aided and inspired the thought of nearly numberless readers since she wrote it. Read for its own interest, for the history it records, and for its insight into William Wordsworth's process of composition, Dorothy's journal has been incorporated into the larger historical and cultural story, or stories, of the

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that William was merely the scribe of these lines, but prefers the hypothesis that brother and sister composed them together, or that William was the original author (see page 274 in the 2002 edition). Here I preserve Moorman's notion that Dorothy wrote the lines and William copied them – but fully admit I do so for sentimental reasons. Whatever theory of composition is correct, the lines William wrote into the Alfoxden Notebook are now the only part of the Alfoxden Journal that exist in manuscript.

Romantic period. Her interpretation of her own visual impressions on January 20, 1798 has become part of shared cultural memory in the process.

This dissertation will be concerned with much this sort of cultural knowledge work via texts: it will focus particularly on novels as they inspire and enable thought, especially where such thought processes both involve visual information and also are characteristic of nineteenth-century Britain. In particular, it will propose that novels offered – and offer – one important space for communities of readers to define shared values, work through the local implications of wider cultural trends, and practice sharing points of view. By its nature, fiction asks readers to inhabit different perspectives, flesh out characters from limited descriptive cues, and turn curiosity into information about others. Readers take pleasure in this play with shifting perspective, but modern psychological research suggests that reading also performs useful work: readers of fiction are absorbed in and transformed by their reading, and lastingly affected afterward. Novels thus share with other written texts their usefulness to memory and thought both individual and cultural; to this utility they add the command of story and the magic of art.

As a major genre that came into its own in the nineteenth century, famously an age of widespread social and cultural change in Britain, novels provided readers with an important new way to exercise sympathy. The nineteenth-century word for empathy, "sympathy" was an abiding concern for many nineteenth-century Britons, who believed that visual observation facilitated this knowledge about other people's emotions, perspectives, and experiences. While scholars of visual culture have often associated Victorian art and literature that foregrounds vision with spectacle, alienation, and fragmentation – the *interruption* of sympathetic understanding – examination of texts that, like Dorothy's, turn vision into aesthetics suggests that this scholarly interpretation may not be the whole story. Indeed, newer work in cognitive science and the psychology of empathy reveals that sight provides one important avenue for understanding others' inner lives, and that art offers powerful shared experiences of seeing and knowing from other points of view when it activates audiences' imaginations to complete meaning.

This dissertation examines novels paired with visual art (paintings or photographs) or visual experiences (such as looking through a microscope, or visiting a museum) familiar to nineteenth-century Britons. In particular, I will focus on a subset of British novels that wielded popular influence in the nineteenth century and remain part of the canon today. Including Jane Austen's *Pride and Prejudice*, Charlotte Brontë's *Villette*, George Eliot's *Middlemarch*, and Rudyard Kipling's *Kim*, this group affected and responded to British culture, and continues to exercise influence over modern ideas about fiction's purpose and power. These novels, in particular, adapt the nineteenth-century British preoccupation with vision as mode of knowledge and an avenue for curiosity in order to elicit empathy. Thus the dissertation will also attend to nineteenth-century visual phenomenology as this helps elucidate readers' responses. Through this interdisciplinary project, drawing on literature, art history, history, psychology, and cognitive science, I challenge earlier scholarship to argue that many Victorian artists and writers, like their Romantic predecessors, experimented with records of visual impressions in order to *facilitate* sympathy. The project's subordinate but related claim is that nineteenth-century British ideas about sympathy persist and return in today's cognitive psychology; these repetitions substantiate the insight of the Romantic aesthetic revolution and also clarify fiction's ability to transport audiences into other lives.

Cognitive Artifacts

One way to describe the usefulness of Dorothy's journal, both for Dorothy and for everyone who has found something inspiring, edifying, or interesting in any edition of her pages since she wrote them, is to define her journal as a "cognitive artifact." A cognitive artifact is a human-created device that assists cognition – knowledge, memory, problem solving, pattern recognition, classification, perception, attention, insight, and a host of other potential tasks related to thought. Cognitive scientist Donald Norman describes cognitive artifacts as "mental tools" and "external aids that enhance cognitive abilities" (*Things* 4, 43). As he writes,

> The human mind is limited in capability. There is only so much we can remember, only so much we can learn. But among our abilities is that of devising artificial devices – artifacts – that expand our capabilities. We invent things that make us smart. (*Things* 3)

Norman argues that cognitive artifacts do not amplify cognition the way a megaphone amplifies the voice; instead, they "change the nature of the task being done [to] enhance the overall performance" ("Cognitive" 19). A slide rule, for example, turns a complicated mathematical calculation from an onerous memory task into one that requires precise physical manipulation (to move the rule), and sharp observation (to read results accurately).[2] The slide rule changes the task to one that consumes less time and mental resources because some knowledge has been "stored" in the instrument (Card et al 2-3).

As Norman points out, cognitive artifacts are not all manipulable objects like the slide rule. They include records like notes and books, which aid extended thinking because they serve as external memory; like Dorothy's journal, they allow the user to return to and deepen previous thought, or benefit from the thought and knowledge of others. Not all cognitive artifacts are physical, either – they include procedures, such as the routine checks a pilot performs before take-off, and systems, like mathematics (Norman *Things* 4-5). Such mental cognitive artifacts aid cognition because they provide "information structures" that guide thought and assist communication (Norman *Things* 4). In David Herman's apt phrase, cognitive artifacts are "*material* as well as *mental* objects that enable or enhance cognition" (163, my emphasis). Thus for example cartography is a cognitive artifact because it is an invented system of conventions for representing space, whose users understand its symbolism; within the system an individual map "stores" information and allows a user to make calculations about such concerns as distance or elevation; a book of maps collects these records for easy preservation and reference. Cartography, map, and book are all cognitive artifacts. Similarly, writing itself is an invented conventional system whose individual users (whether hand writers or typists) produce texts that store information for communication, reference, and knowledge sharing and serve as cognitive artifacts in their own right.

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[2] A digital calculator is no less a cognitive artifact because its workings are invisible, however. It just changes the task differently. All three scenarios – mental calculation, use of the slide rule, use of the calculator – require basic understanding of the mathematical problem (Card et al 2-3).

Amid this apparent diversity, three key components constitute all cognitive artifacts: their artificial, "invented" ontology, their ability to "enhance" cognitive performance, and their function to *represent* information (Norman *Things* 4-5, "Cognitive" 17). Cognitive artifacts do their performance-enhancing work via representation, or the use of symbols or signs to stand in for the concept, object, or event represented. A representation is an abstraction that focuses on the essential and disregards the inessential elements of what it represents, allowing easier communication, description, memory, and analysis. Yet as Norman notes, "The critical trick is to get the abstractions right" (*Things* 49). If a representation highlights or disregards the wrong elements, then it disrupts communication, derails description, and disorders thought. Done well, however, a representation usefully translates thought into "whatever form and structure best" suits the problem at hand (Norman *Things* 51). It should be noted that both the representation itself and the cognitive artifact that supports it are cognitive artifacts: a record and its book, a display and its computer screen.[3]

As such a text, Dorothy's journal can be considered a cognitive artifact in multiple senses: as individual record and as participant within several systems, as physical and as mental object. The original journal was a physical object that Dorothy wrote in, with pages she turned, read, and scanned, and covers she closed. It recorded her observations, changing what would have been a memory task into a writing and reference task; in turn Dorothy's use of it presumably organized her thoughts and prompted new ones. She participated in systems common to her culture, the use of journals and the practice of close observation being (often related, under empiricism) conventions of her day. As a record, however, the journal's singular physical existence ultimately proved less important than the *stories* it could tell about Dorothy and her brother – their daily lives, their thoughts, their sensibilities, their habits of perception. These made the journal important enough to be copied, saved, and circulated among readers (and writers) who believed it provided useful knowledge. The journal is thus *one* original cognitive artifact, now lost, and *multitudes* published and shared since, which also represent its abstract existence as culturally useful item. Its stories live, and continue to aid thought.

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[3] Proponents of extended cognition often argue that such external aids become such an integral part of cognition that some "thinking" actually happens outside the body. Without going quite so far, this dissertation will maintain that the use of an external aid can enhance cognitive performance – even enabling kinds of thinking that would not be possible without it. Similarly, the *nature* of the aid can affect cognitive performance perhaps as much as the fact of its existence. Full comprehension of a text's function thus requires attention not simply to either text or reader but to as much as possible of the system in which both are embedded.

Stories as Cognitive Artifacts

To call a story a cognitive artifact is to reference both the possibly physical existence of a story, circulated in print and communicated in writing, and its abstract nature as an object of memory, which may be shared verbally, may be discussed without reference to a physical text, and may serve as a kind of repository or marker of shared culture. What marks "story" as cognitive artifact under all these circumstances is, again, that it is made by humans, that it represents, and that it can assist and enhance (or at least, change) thinking, regardless of whether it is a "material" or a "mental" object, or both.

A growing, interdisciplinary contingency of researchers has begun to see story, or narrative, in just this way. Ubiquitous in human cultures, story is not only fun; like many other forms of play, it also performs useful work. Influential psychologist Jerome Bruner suggests that narrative is a cognitive mode that helps us understand and "construct the social world and the things that transpire therein," "the rich and messy domain of human interaction" (5, 4). As "familiar and ubiquitous" to humans as water is to fish, Bruner asserts, narrative helps us "organize our experience and our memory of human happenings" in the form of "stories, excuses, myths, reasons for doing and not doing, and so on" (4).[4] In short, narrative helps humans understand personal and social experience and solve problems related to social knowledge, or "what we think people are like and how they must get on with each other" (Bruner 20-21).

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[4] Though Bruner suggests both a "narrative mode of *thought*" and a "narrative *discourse*," he argues that this is a distinction without a difference, because "our experience of human affairs comes to take the form of the narratives we use in telling about them" (5, emphasis in original).

This dissertation will be concerned with four related ways, among the myriad, in which story helps humans navigate experience, particularly experience within a community. Story allows us to impose patterns on personal experience to understand it, to comprehend that others' inner lives are different from our own, to practice empathy in inconsequential (fictional) scenarios, and to see meaningful patterns in the life of the larger environment, culture or society.

First, story allows us to organize our own life experience, which means "chunking" it into workable pieces, providing it with a sequence, invoking cause and effect relations, and otherwise imposing pattern (Herman 172-185). In short, we can make *sense* of what would otherwise be chaotic via narrative. As Jonathan Gottschall puts it, "We spend our lives crafting stories that make us the noble – if flawed – protagonists of first-person dramas. A life story is a 'personal myth' about who we are deep down – where we come from, how we got this way, and what it all means" (161). Stories, like dreams or other forms of play, may also offer us the chance to experiment with alternative identities safely (Humphrey 106-125). Several features of narrative thinking help us perform this psychological work. "Chunking" allows us to break up experience into manageable segments. Just as stories have beginnings and endings, with multiple incidents in between, so we organize our life experiences into episodes that belong to a longer narrative (Herman 172-5). Causal relations allow us to discover the immutable beneath mutability: our basic identity remains the same even as time and experience produce changes in appearance and behavior. Sequencing implies causal relations, as things that happened earlier are assumed to help cause things that happened later (Herman 175-178). Patterns allow us to answer those questions about “where we come from, how we got this way, and what it all means.”[5]

An important component of this process of self-awareness is the ongoing relationship between the individual perspective and the environment or community – what Herman calls “the inextricable interconnection between *trying to make sense of* and *being within* an environment that extends beyond the self” (183, emphasis in original). In other words, understanding one’s own experience is intimately bound with understanding one’s place in the larger social group. We learn to see ourselves partly by considering how others see us.[6] Individuals build personal histories from the accrual of narratives about origins and experiences; cultures gradually build traditions from the accrual of similar narratives as explanations. Individual narrative histories are always in dialogue with these larger cultural versions. As Bruner writes, “our individual autobiographies… depend on being placed within a continuity provided by a constructed and shared social history in which we locate our Selves and our individual continuities” (20). If cultural histories are constructed by many individual repetitions of the same narratives, the development of any individual history is also intimately bound with the larger narrative traditions of that community cultural history.

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[5] Perhaps most importantly, personal memory is like the experience of story in that both are simulated. Any narrative provides only the basic sketch of story as the audience experiences it; those who read it, or listen to it, or watch it on stage or screen construct out of personal experience the full world it merely suggests. As psychologist Keith Oatley writes, “We create our own version” of the narrative; “We run a simulation on our own minds” (18). Similarly, memories are not captured and filed for later access, when they appear again like perfect photographic copies. Instead, it seems, they are reconstructed with every act of remembering. We re-experience a memory as a kind of simulation based on the basic sketch of the original experience, but re-created, with much the same possibilities for imaginative construction as in the experience of story. Countless studies suggest memory’s flawed (and wonderful) fabulations (Gottschall 156-176). The human drive to impose narrative on personal experience is so great that we will even invent false – but entirely plausible-sounding – explanations for our own behavior under test conditions that ensure our narratives come from thin air. (See for example Michael Gazzaniga’s work with split-brain patients, as recorded in “Forty-Five Years of Split-Brain Research and Still Going Strong” and *The Mind’s Past* and discussed in Gottschall’s chapter 5). In the cases of memory and of fiction, “Narrative ‘truth’ is judged by its verisimilitude rather than its verifiability” (Bruner 13).

[6] See Philippe Rochat, *Others in Mind: Social Origins of Self-Consciousness*.

Second, story offers practice in the awareness that others have inner lives that differ from our own. In most of daily life, this happens effortlessly: “We have only so much as to glance at another human being and we at once begin to read beneath the surface. We see there another conscious person, like ourselves,” an individual with personal emotions, desires, hopes, memories, a past and a future (Humphrey 30, 66). The human tendency to attribute mind appears in our proclivity to bestow mental states even on non-conscious entities – the car that will not start, the rain that will not stop (Humphrey 85-87). Yet we seem to like to exercise these skills in fiction, where we use them to turn the limited cues a story provides about a character into mental conceptions of more or less fully realized people. “Theory of Mind,” or “mindreading” is the cognitive science term for this faculty by which we read others’ perspectives, thoughts, and emotions from behavior and appearance. Lisa Zunshine argues that the purpose of fiction is precisely to exercise this function, because that exercise is pleasurable, and because it provides playful practice in mindreading skills we use in daily social interaction (4-6). Stories may help us navigate social interaction by simulating complex situations that, if they do not mimic those we see in daily life, at least “run parallel” to them in requiring awareness that others have different perspectives (Gottschall 58).

Third, stories may help us become better not only at recognizing that others have unique inner lives, but also at reading and *sharing* those perspectives. Some cognitive scientists suggest that “mirror neurons” in the brain are active when we feel or act, and also when we perceive someone else feeling or acting. In other words, our brain states are partly the same whether we perform or perceive an emotion or an action (Iacoboni 4-8). Marco Iacoboni, a neuroscientist who studies mirror neurons, asserts that these neurons underlie audiences' responses even to fictional characters' predicaments, rather than to those we directly perceive: "We have empathy for… fictional characters – we know how they're feeling – because we literally experience the same feelings ourselves" (4).

Though other scientists caution that mirror neuron enthusiasts attribute too much to these neurons, it does seem clear that stories change our brains and bodies. One study led by Mbemba Jabbi discovered that some of the same brain regions activated when subjects tasted disgusting liquid, watched people taste liquid and make disgusted faces, and read about people experiencing disgust (Jabbi et al 1, 4-5). Jabbi and colleagues concluded "that imagination and social perception of emotions may share neuroanatomical underpinnings" and that "the neural basis of the captivating experience of reading a book" may involve the partial simulation or replication of brain states associated with emotion. Nicole Speer and colleagues' 2009 study asked participants to read short narratives while their brain activity was monitored. Speer's group found that when their subjects read about characters' bodily movements and interaction with their environment, including the manipulation of objects, their brain activation looked much like the brain activation of people moving about and grasping objects themselves (996-998).[7] Accumulating evidence does begin to suggest that people share one another's inner states by mirroring them on a neural level. Reading about a character's emotion can provoke us to feel that emotion with a similar brain state.[8]

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[7] See also the Stanford experiment described in Corrie Goldman's "This is Your Brain on Jane Austen, and Researchers at Stanford are Taking Notes." In this study, ongoing as of publication of the news article, subjects read a chapter of *Mansfield Park* and alternated between reading for pleasure and reading closely for scholarly interest as an fMRI scanner tracked blood flow in their brains. Results at the time of publication suggested that close reading involves more brain activity, which may point to focused reading "as a kind of cognitive training" (qtd in Goldman).

Over time, some researchers suggest, accumulated experience with fiction may rewire readers in more lasting ways. Stories may help us to become better empathizers in daily life.[9] This is not because readers store and retrieve specific lessons from stories they have read and retained in explicit memory, and then apply them to a social dilemma at hand, but because accumulated practice in simulated social interaction hones skills. Any practice via "realistic rehearsal… leads to enhanced performance regardless of whether the training episodes are explicitly remembered" (Valli and Revonsuo 11, qtd in Gottschall 65). Perhaps stories, the mind's simulations of social life, practice readers in the same way (Gottschall 64-67, Mar et al "Bookworms" 696).

The research of Oatley and his colleague Raymond Mar suggests this may be true. In one study that controlled for age and language fluency, Mar, Oatley, and colleagues found that frequent fiction readers both scored higher than frequent readers of non-fiction in self-reported tests of empathy, perspective-taking, and story absorption tendencies, and also performed better than non-fiction readers in tasks requiring social inference skills (Mar et al "Bookworms" 703). Exposure to narrative, with its "depictions of the actual world replete with intentional agents pursuing goals," seemed to make a positive difference in social ability, despite negative stereotypes of the isolated bookworm (Mar, Oatley, et al "Bookworms" 695). The possibility remained, however, that fiction readers are drawn to fiction's interpersonal nuances precisely because they already possess greater social ability. Mar, Oatley, and Peterson conducted a second study designed to control (at least partly) for the effect of personality traits, and found that fiction readers still outperformed nonfiction readers on tasks requiring empathetic inference. Though their studies cannot be fully definitive, Mar and colleagues suggest that fiction may indeed practice social skills. An inclination towards imaginative engagement may also help start an individual on a life of reading fiction: "a ready capacity to project oneself into a story may assist in projecting oneself into another's mind in order to infer their mental states… [T]his capacity to really empathize with fiction appears to explain, in part, why fiction-reading habits relate to social skills" (Mar et al "Exploring the link" 421-2).[10]

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[8] Gottschall discusses the Jabbi and Speer studies in several chapters, including "Hell is Story-Friendly."

[9] This is not the same thing, of course, as becoming either a more compassionate or a more moral person.

Finally – as the immediately preceding paragraphs should suggest – just as we understand ourselves through the stories we tell ourselves, so we understand others through the stories we tell about them. This dissertation will argue that cultures use stories to seek meaning in shared cultural life, or to borrow Martha Nussbaum's words, as escorts "bringing us into contact with the complexity of our own lives and the lives of others" and "as guides to what is mysterious and messy and dark in our experience" individually and together ("Exactly" 348). Stories, among all the tools humans use to understand experience, usefully allow room for the qualitative and the subjective, for the emotions and the imagination.

The generic and the particular are always in tension in any given story. As cognitive artifacts, of course, stories abstract: interesting stories typically exclude the inessential minutia of daily life in favor of essential events and dialogue that advance the plot, which is to say, those that relate to the characters' problems and to the larger social issues at stake. Stories also necessarily present the particular, the local, and the specific:

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[10] I am indebted to Gottschall's *The Storytelling Animal* for sending me to Mar's and Oatley's work.

the points of view of individual characters or groups within a particular, even personal context. Even a story that seems to capture universal truths must do so with particular characters from particular places within particular circumstances. Yet narrative research suggests that most stories belong not just to genres but also to "general types" that often intersect cultures and traditions (Bruner 7, Hogan 133-138).[11] As Bruner writes,

> Particularity achieves its emblematic status by its embeddedness in a story that is in some sense generic…. The 'suggestiveness' of a story lies, then, in the emblematic nature of its particulars, its relevance to a more inclusive narrative type. But for all that, a narrative cannot be realized save through particular embodiment. (7)

Stories are thus eminently useful for exploring the effects of the universal on the particular, and vice versa – of context and perspective on others' inner lives and characters, in the messy affective richness of lived experience – to "enable us to understand how similar hopes and fears are differently realized in different social circumstances" (Nussbaum "Exactly" 350). Stories offer a complement to the general and the universal in the sense that they show how general rules affect individual lives, and may in turn teach general precepts through specific examples that form repeated patterns. Similarly, stories that offer multiple possible subjective interpretations complement the complexity of social life, where general rules would seem to oversimplify, and they practice readers in careful "lucidity" and "the intense scrutiny of particulars" (Nussbaum "Finely" 516). Stories create and shape communities and individuals; stories may make us better readers of ourselves, of one another, and of all the nuanced intricacies of subjectivity and emotion that characterize our shared communities.

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[11] Romantic narratives of separation and reunion, heroic narratives of deposition and triumph, and sacrificial narratives of violation and propitiation all cross genetic and geographic divides to appear, with creative variation, in cultures nearly everywhere (Hogan 133-138).

But this work requires good readers as much as good stories. If humans can remember tremendous amounts of information when it is organized into patterns, nevertheless the pattern must be perceived for to be meaningful (Norman *Things* 77). Written stories afford reflection in the same sense that a book's pages afford turning: the reader "can review it, compare this section with that, analyze the structure and the content" (Norman *Things* 246). Readers determine their own pace and can stop to consider and reflect on the form and content of their reading wherever desired. But the transition from what Norman calls the experiential mode, where the reader is absorbed fully in the experience of the text, into reflective reasoning depends on the impulse of the reader (*Things* 47). Without the impulse, the reader will not necessarily make the transition, or the connections between storyworld and her own society. Suzanne Keen notes that group discussion of literature, during or after reading, can be crucial encouragement of such reflection. A teacher who encourages readers to find patterns in their reading, and links between the experience of reading and readers' own subsequent actions, can encourage meaningful contemplation and even empathy. But, she cautions, individual responses to stories vary as much as stories do, and the production of empathy might best be considered a neutral tool that can be used for ends we might deem destructive as well as constructive (25, 28-38).

In each of the above uses, stories serve as "intuition pumps," to borrow Daniel Dennett's term for "thought experiments" that "pump an intuition" (182). "[J]ungle gyms for the imagination," stories as intuition pumps "structure the way you think about a problem" and therefore how that problem is solved (Dennett 182). Like other cognitive artifacts, in other words, stories change the problem-solving task and the way the problem solver approaches it. Mar and Oatley's argument is worth quoting at length:

> The product of an author's investigation into human nature is a story, which is a simulation in two separate senses. First, stories simulate or model the social world through abstraction. This abstraction condenses complex information regarding interactions between multiple autonomous and intentional agents without substantial discarding of key elements, while simultaneously revealing the principle underlying chords of the social world. Second, the abstraction of experience found in stories evokes, through various mechanisms that depend on imagery and literary language, a simulative experience that allows for the compelling and efficient transmission of social knowledge. Just as the idea of simulations that run on computers has extended conceptual understandings of the cognitive psychology of vision and reasoning, we propose that the idea of fiction as a kind of simulation that runs on minds will extend our understanding of selves in the social world. (Mar and Oatley "The Function of Fiction" 187-188)

That they do so by engaging the imagination is one key source of their power.

The stories on which I focus, in their instantiation as novels, are for the willing and receptive reader devices of *transportation* as well as of continued thought. Richard Gerrig compares the experience of narrative to the experience of travel "some distance from [one's] world of origin," through fiction's magic (10). Story's art can weave a spell so complete that readers forget to attend to their own surroundings and feel "immersed in the world of the narrative," transported into other lives, other times, other places (Green 247). "A transported reader," writes psychologist Melanie Green, "suspends normal assumptions and treats the narrative as the frame of reference" (248). Story's pleasurable claim on the imagination offers a window into other worlds and a vehicle to carry the willing reader there. Narrative absorption relies on readers' intuitive emotional responses to others and to situations, which in turn depend on imaginative engagement and aesthetic response. The work of Green and others indicates that degree of transportation is associated with changes in attitude and even in personality. The more a reader is transported into a story, the more he or she is likely not only to view characters sympathetically, but also to agree with the story's general import and the social beliefs it expresses.[12]

Aesthetic response is therefore an absolutely necessary component for the work that fiction performs, even if it may not be fully sufficient without an intentionally thoughtful reader. The "moral of the story," said in plain words, may be less effective at providing such insights than the story itself; readers may need a story's *art* – its particular language – to experience a full aesthetic and imaginative response. Nussbaum even suggests that different aesthetic styles may afford different kinds of insight. Austen makes available a certain kind of social awareness, Eliot another. Just as the kind of stories I will discuss draw on generic types and universal themes, but make these particular in character and context, so they make notions of empathy and social responsibility particular through specific language that in different words would lose some of its power and impact. If no author can count on reflective evaluation in her readers, so no story-analyst should lose sight of the aesthetic of transportation into other lives that does the work of perspective sharing. The artfulness of the stories I have chosen lead the reader to *wonder* – to be curious, and to marvel – and this play with words on readerly curiosity is inextricable from the work the stories perform.

Vision, Curiosity, and Wonder

One way to understand nineteenth-century Britain is as an age in which older cultural stories began to make less sense, and newer ones accrued explanatory power. An obvious example for today's critics would undoubtedly be the contest between the Darwinian story of evolution, which crystallized scattered and long-generating materials into a unified theory, and older natural-theological explanations for diversity in living creatures. But the nineteenth century is famously an era of immense change in Britain, the first country in the world to industrialize and the foremost in burgeoning empire at the time.[13] Not surprisingly, then, across the century Britons were engaged in navigating new and changing relationships with each other, with their larger culture, and with the natural world. I submit that such changes required other new explanatory cultural stories as well.

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[12] For more on this process, see Green and Brock, "The Role of Transportation in the Persuasiveness of Public Narratives" and Green, Brock, and Kaufman, "Understanding Media Enjoyment: The Role of Transportation into Narrative Worlds" and finally, Green and Carpenter, "Transporting into Narrative Worlds: New Directions for the Scientific Study of Literature."

This exploration, both literal and metaphorical, consistently demonstrates a growing attitude of curiosity, or the intellectual impulse to know more.[14] It is as if new information about England's own flora and fauna, about human life, and about the globe and its far-flung inhabitants provoked both new awareness among the average nineteenth-century Briton that learning it might be desirable.[15] Public lectures, advances in printing, and better and more widespread education made such information popularly accessible, where it had once been the domain of a privileged few. If, as researchers of curiosity suggest, humans play on the edges of the unknown, then no wonder nineteenth-century British art and science responded with stories that sought to explain these changes, assimilate them, or respond to them.[16]

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[13] In 1800, the population of England was still predominantly rural. One century later, nearly 80 percent of Britons lived in cities. The middle decades of the century saw technological innovations that brought England new wealth, as well as a steady erosion of the upper class' long financial and political domination. As the Reform Bills transferred political power to lower classes, and the Industrial Revolution lined the pockets of the middle class and brought the lower classes streaming into the cities for work, the old landed estate system began to crumble (Strong 30-37). Over the course of the century, Acts of Enclosure tamed most of whatever wild land was left. Empire brought the British into contact with new peoples, new flora and fauna, and new kinds of objects – all of which streamed back home and had to be studied, organized, and assimilated (Fulford et al 6, 8, 12-13. See also N Armstrong, *Fiction in the Age of Photography*). More British citizens lived inside less space than ever before, even as the horizons of the British Empire expanded around the globe until finally, famously, they met again. England was the first country to experience industrial pollution, and the first to have an international capital on a truly modern scale.

[14] Reio et al establish that "information seeking, or cognitive curiosity, which stimulates information-seeking, exploratory behavior" is indeed an independent form of curiosity, "distinct" from "sensory curiosity," which provokes the curious to seek new forms of sensation rather than new information (118).

[15] Indeed, in a seminal 1994, article George Loewenstein defined intellectual curiosity (which he called epistemic curiosity) as the result of awareness that a "gap in one's knowledge" exists (76). Awareness, or knowing what one does not know, typically precedes interest. See Loewenstein, "The Psychology of Curiosity: A Review and Reinterpretation."

Strikingly often, nineteenth-century curiosity took a visual turn.[17] Anna Letitia Barbauld and John Aiken's *Evenings at Home; or, The Juvenile Budget Opened,* first published between 1792 and 1796 and eventually "a classic of the Victorian nursery," links education explicitly with curiosity about the visual appearances of things (Fyfe).[18] A chapter titled "Eyes and No Eyes; or, The Art of Seeing" compares the accounts of two schoolboys, William the budding naturalist and Robert the dullard, who have each taken the same afternoon walk. Robert was bored with no one to see or converse with, but William tells his teacher that he "hardly took a step that did not delight" him and has "brought [his] handkerchief full of curiosities home" (Barbauld and Aiken 97). This bundle of "curiosities" offer the material for the imaginative recreation of his walk, an extended narrative that lets the teacher interpose nuggets of fact and lessons on the utility and pleasure of curiosity as it leads to keen visual observation. The teacher concludes the chapter with a summary of its import: "the observing eye and inquiring mind find matter of improvement and delight in every ramble in town or country" (Barbauld and Aiken 97). Wonder inspires investigation, which provides the pleasure of further wonders: work and play unite in visually-stoked curiosity, which is its own reward.

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[16] As Paul J. Silvia puts it, "New and comprehensible [things] are interesting; new and incomprehensible things are confusing" (58). Wojciech Pisula similarly argues that "novelty" and "complexity" both "evoke curiosity" but "[t]he prerequisite, however, is comprehensibility": if people believe they can understand something strange and new, they will feel curious; if the novel seems too difficult even to begin to grasp, then "what follows is withdrawal and stress" rather than exploration and learning (131).

[17] Curiosity may have long-standing associations with vision, as George Loewenstein points out. He notes that St. Augustine called it "ocular lust" and Sigmund Freud used the roughly equivalent term "Schaulust" (Loewenstein 76-77). I am indebted to Ashley K. Reed for a translation of "Schaulust" as "a strong desire to look at things;" this is, as Ashley says, "curiosity with a specifically visual component."

[18] The book had gone to sixteen editions by 1850. The copyright of the second version expired in 1851, and "by the 1860s, *Evenings at Home* was being published by six other publishers" in addition to George Routledge, who published the first cheap reprint (Fyfe). The final full reprint was published in 1905 (Fyfe).

I suggest that this general curiosity and the interest in vision it provoked began in the Romantic period, where it surfaced in both aesthetics and science, and increased in intensity and influence across the Victorian age. Though we are, as Richard Holmes notes, accustomed to thinking of Romantic literature as "intensely hostile" to science, "its ideal of subjectivity eternally opposed to that of scientific objectivity," the two were more intertwined under the banner of curiosity and vision than this culturally inherited story of difference suggests (xvi). Disciplines separating intellectual activity into two cultures had yet to evolve, and as Fulford et al argue, "it was not customary formally to divide fictional from factual writing" until well into mid-century (4). Romantic aesthetics and what Holmes, Noah Heringman, and others have termed "Romantic science" shared a sense of wonder at the visible natural world in its various appearances, and an impulse to understand more about it for the pleasure of knowledge, even if their modes of discovery and definitions of "knowledge" sometimes differed.

The braided nature of science and aesthetics as modes of curiosity's relationship with vision in the Romantic period is clear when one puts Wordsworth's evolving "Preface to *Lyrical Ballads*" back into conversation, as it seems originally to have been, with Humphry Davy's 1802 Introductory Discourse. As fundamental texts for Romanticism, these two documents represent the focused thought of men who would eventually be recognized as the intellectual pillars of the period.[19] In his introductory lecture, which Coleridge heard, Davy asserted the importance of chemistry for intellectual and social progress and, as if defending the man of science against the implications of Wordsworth's 1800 "Preface," borrowed Wordsworthian language to "sketc[h] out a bold forecast of a coming age of technology in which the chemist would be the architect of great benefits for mankind" (Sharrock 65). A few months later, Wordsworth published the 1802 version of *Lyrical Ballads*, with a revised "Preface" in which he seems to respond to Davy's discourse with a section discussing the poet and the man of science (Sharrock 65-69).[20]

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[19] Davy, who would become "the Romantic Age's most prominent and passionate Man of Science," knew Wordsworth through Coleridge, and had corresponded directly with Wordsworth to correct the proofs of

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the 1800 edition of *Lyrical Ballads*, including the "Preface" in which Wordsworth argued for the value of the poetic mind (Ross 24, Sharrock 57, 66). In London in January 1802, Davy delivered his Introductory Discourse, the first of what would be many well-attended public lectures on chemistry.

[20] In his January lecture, Davy defends science against beliefs like those Wordsworth and Coleridge held at the turn of the century, that "the kind of analysis of nature performed by the experimental scientist was useful but superficial… the work of an inferior faculty" (Sharrock 61). In the 1800 and following versions of the "Preface," Wordsworth claimed that poetry (by contrast) is concerned with "the primary laws of [human] nature" and "the essential passions of the heart," one source of its restorative powers (Wordsworth "Preface" 392). Davy asserts therefore that the purpose of his lecture is to explore the "effects" of chemistry "upon the progress of the human mind" (316). By this he means both technological progress, which moves general knowledge forward, and also "the effects of the study of this science [chemistry] upon particular minds," which he examines in order to "ascertain its powers of increasing… happiness" and health (324). Davy even asserts that the study of science "may destroy diseases of the imagination, owing to too deep a sensibility," returning the man of science to a balanced appreciation of "tranquillity and order" (326). Science as Davy describes it is not superficial, but actually addresses the profoundest needs of the individual and the community, even as it interests the public; he hopes that scientific progress will gradually bring about an improved society, "in which the different orders and classes of men will contribute more effectively to the support of each other than they have hitherto done" (322).

Wordsworth then adds a long section to the 1802 "Preface," a part of which discusses the distinction between "the Poet" and "the Man of Science." He admits that both poet and man of science take pleasure in the pursuit of knowledge, and seems to imply that both sorts of pursuit can be useful. Yet he also claims that while the "solitary" "Man of Science seeks truth as a remote and unknown benefactor," the Poet's pursuit is of a different and more important kind of knowledge: "the first and last," "a necessary part of our existence" (Wordsworth "Preface" 401). The Poet, unlike the Man of Science, "sing[s] a song in which all human beings join" (Wordsworth "Preface" 402). Poetry's expression of human experience is for Wordsworth still the more crucial sort of knowledge than the merely factual information science provides. Nevertheless, should science bring about a "material revolution… in our condition" of the very sort that Davy prophesized, and therefore also "in the impressions which we habitually receive," then the poet too will adapt, voicing the human sensations contingent on the changes (Wordsworth "Preface" 403). He writes,

> The remotest discoveries of the Chemist, the Botanist, or Mineralogist, will be as proper objects of the Poet's art as any upon which it can be employed, if the time should ever come when these things shall be familiar to us, and the relations under which they are

Although Wordsworth holds Davy's claims for science's benefits at arms' length, and Davy implies that a Wordsworthian "spontaneous overflow of powerful feelings" might best serve those who also remember the importance of "order" (a word with Enlightenment overtones), the two men each claim for their respective discipline a restorative power based in renewed wonder over the apparently quotidian. This pleasurable sense of wonder begins in curiosity about visual appearances and leads to profounder understanding and appreciation. As in the earlier version, Wordsworth of the 1802 "Preface" posits poetry as the antidote to the "craving" for "outrageous stimulation" that plagues those (mostly city-dwellers) grown accustomed to increasingly wild cultural display in the form of theatrical spectacle, "frantic novels," "extravagant" verse, and titillating newspaper stories (Wordsworth "Preface" 395). Where such spectacles "blunt the discriminating powers of the mind" and "reduce it to a state of almost savage torpor," his poetry adopts the simple language of truthful observation to demonstrate how restored perception can find the "unusual" and the "interesting" in even the most "ordinary things" (Wordsworth "Preface" 392). Though Wordsworth writes that poetry's first concern is with the mind "when agitated by the great and simple affections of [human] nature," the ordinary things that excite such emotion include both everyday social situations and also the natural world, to which "the mind of man" forms a "mirror" ("Preface" 394, 402).

Davy, perhaps influenced by the language of Wordsworth's 1800 text, claims similar restorative benefits for the mind in science. Like Wordsworth, Davy's text (published soon after the lecture) finds cities sources of perceptual desensitization, and

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> contemplated by the followers of these respective Sciences shall be manifestly and palpably material to us as enjoying and suffering beings. (Wordsworth "Preface" 403)

asserts that “cultivation” of interest in the sciences will “attach feelings of importance even to inanimate objects; and… furnish to the mind means of obtaining enjoyment unconnected with the labour or misery of others” (325-6). Such an interest will not only exercise the mind’s powers of observation and imagination, but also improve relationships with other people and the natural world, for “the physical sciences… demonstrate that every being is intended for some definite end or purpose” and therefore worthy of respect and regard (Davy 325-6). Like Wordsworth’s poetry, Davy’s science teaches its practitioner newly to see the common and the ordinary, which gain in significance as the observer gains in knowledge: “The appearances of the greater number of natural objects are originally delightful to us, and they become still more so, when the laws by which they are governed are known” (325).

Despite their differences, then, together Wordsworth and Davy help to usher in the era of Romanticism in both art and science: an “Age of Wonder” at even the ordinary and quotidian, wonder that inspired a “reverent contemplation of nature” observed “simply and precisely” (Holmes 249). Davy compares chemistry properly pursued to “slowly endeavouring to lift up the veil concealing the wonderful phaenomena of living nature” (314), and describes science’s recent progress as attaining newly accurate seeing: “The dim and uncertain twilight of discovery, which gave to objects false or indefinite appearances, has been succeeded by the steady light of truth, which has shown the external world in its distinct forms, and in its true relations to human powers” (321). Wordsworth likewise claims that the language of truthful, attentive observation will usefully display the real importance of his ordinary subjects: “I do not know how…” he writes, “I can give my Reader a more exact notion of the style in which I wished these poems to be written than by informing him that I have at all times endeavoured to *look steadily* at my subject; consequently, I hope that there is in these Poems little falsehood of description, and that my ideas are expressed in language fitted to their respective importance" ("Preface" 396, my emphasis). Similarly, he calls the poet's "task light and easy to him who looks at the world in the spirit of love" ("Preface" 401).

One might object here. As with Romantic aesthetics more generally, Wordsworth clearly privileges imagination and memory over the sort of objective appearances that are important to Davy's science. Wordsworth also objects to scientific thought where it seeks to parse the world, rather than to perceive holistically (to see "similitude in dissimilitude" "Preface" 407). Wordsworth makes this argument when he rejects the picturesque's emphasis on external forms and visual interest in favor of a profounder sense of "A presence that disturbs me with the joy / Of elevated thoughts; a sense sublime / Of something far more deeply interfused" ("Tintern" 95-97).[21] Where the picturesque enthusiast craves excitement, variety, and novelty, Wordsworth says he now seeks a deeper imaginative interaction that fosters not mere visual aesthetic appreciation, but a sense of intimate and responsive relationship with the natural world. This profounder engagement celebrates the transformational powers of the imagination over the perceptual powers of the eye: a healthful relationship with nature, suggests the Wordsworth of "Lines Written a Few Miles above Tintern Abbey," is one that will "half create" and half perceive, dispensing with pre-imposed conceptions (like picturesque rules for aesthetics) ("Tintern" 106-7). Wordsworth's form of wonder at the ordinary would then seems largely opposed to Davy's clearly visual attention to the interesting "appearances of… natural objects," just as Romantic aesthetics more generally can seem opposed to visuality as well as the spectacular and the overly rational.

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[21] The craze for picturesque, wildly fashionable by the end of the eighteenth century, sent countless Britons tramping through the English countryside in search of picturesque views – or in other words, those that would be suitable as the subject for a painting, because they were intricate, rough, rugged, dappled with light, or otherwise interesting to the eye. Armed with a Claude glass, a sketchpad, and a guidebook to tell him or her where to stand and how to see, the picturesque traveler took pleasure in "collecting" these scenes and in finishing, reviewing, and sharing them with others after returning home. Though the picturesque once seemed useful to Wordsworth because it directed attention to the natural world, by the time he was writing the poems for *Lyrical Ballads* Wordsworth had come to see it as a superficial and shallow response to mere appearances.

And yet, Wordsworth's habits of mind as expressed in his poetry demonstrate continued attention to the visual, which remains necessary as fodder for the imagination and its communicative power. For instance, though Wordsworth provides comparatively little "mimetic [visual] detail" in the landscape he sketches with the opening lines of "Tintern Abbey," it is precisely the fact that he does "again / … behold" the scene – with all the implications for comprehensive visual embrace that verb implies – that sparks the poem (Hess 286, Wordsworth "Tintern" 4-5). Similarly, in a deceptively simpler poem, it is Wordsworth's explicitly visual experience of daffodils "Fluttering and dancing in the breeze" that allows his later mental re-viewing of them, and facilitates the reader's shared visualized experience of the final stanza (Scarry 162). Even a poem like "The Solitary Reaper," in which sound seems more important than vision, "calls out to the reader in the opening lines to halt and 'Behold…'" the scene (Hess 296). Each of these poems, like many others (e.g. "Composed Upon Westminster Bridge," "Lines Written Near Richmond," "The Thorn," "The Ruined Cottage," parts of the Prelude) involve "a protracted experience of gazing" resulting from a "moment of arrested vision, in which a halted narrator records an image of a momentarily fixed landscape that he can then carry away with him in memory for future imaginative acts" (Hess 296).

In short, if Wordsworth's poems, as exemplars of Romanticism more generally, do half create their meaning, they also half perceive it – a fact overlooked by critics who focus solely on the poet's avowed hostility to vision as it is warped by aesthetic convention. Furthermore, this perception is often explicitly, and at times even exclusively visual. Wordsworth without his powers of visual observation would not be Wordsworth, or perhaps even a Romantic. His sister Dorothy's more mimetic, detailed records of their shared visual experiences in her journal may have been more crucial to Wordsworth than fully acknowledged, as a kind of external memory for the physical visions that in Wordsworth's poetic treatment become insight.

Davy's and Wordsworth's reliance on vision is borne out in the words of other figures, literary and scientific, from their age. For both sorts of endeavor, vision was key but also required exercise. As William Herschel, the famed astronomer, wrote,

> Seeing is in some respects an art, which must be learnt. To make a person see with such a [telescopic] power is nearly the same as if I were asked to make him play one of Handel's fugues upon the organ. Many a night have I been practising to see, and it would be strange if one did not acquire a certain dexterity by such constant practice. (qtd in Holmes 108)

Good observation, according to Herschel, requires practice just as does skillful performance in any other artistic endeavor, among which he classifies observation. While for Herschel "seeing is… an art," for John Constable, "Painting is a science, and should be pursued as an inquiry into the laws of nature" (qtd. in Leslie 355). Like the man of science, Constable asserts, the painter must make long, patient study to train the eye and hand to reproduce even the most apparently spontaneous landscape. The writings of both men clarify that they saw vision as interpretive and subjective, but capable of providing epistemological insight if used with skill and dogged pertinacity. Both would agree with their older contemporary, naturalist Gilbert White, that the best-informed observer is "one that takes his observations from the subject itself, and not from the writings of others" (110).

Despite the occasional hostility that many critics have noted between Romantic art and science, then, I follow Holmes, Heringman, Fulford and collaborators, and others in asserting a shared Romantic attitude towards the natural world and its inhabitants, human and non-human, that emphasized visual wonder. Romantics noticed the ordinary and the often overlooked; relied on objective attention to detail and the subjective qualities of the visual observer, who trained him- or herself accordingly; and believed such rapt, even reverent visual attention offered the promise of sympathetic insight into the natural world and into humans' place within it. To learn to *see*, like William, instead of merely *look*, like Robert, is to discover "a world in a grain of sand, / And heaven in a wild flower" (Blake "Auguries" 1-2).

Vision, Curiosity, Sympathy: An Epistemology and An Aesthetics of Wonder, Cont.

Sympathy's close, though not exclusive, association with vision has roots in the same mid-seventeenth-century empirical philosophy that produced the notion that one person might understand another's inner life via sensory information. Sounding more scientifically prescient than he could have known, Hume famously wrote "that the minds of men are mirrors to one another" (365). For Hume, sympathy depended on the work of the imagination, but it was an imagination often fired by sight, such as he described in himself: "When I see the *effects* of passion in the voice and gesture of any person, my mind immediately passes from these effects to their causes, and forms such a lively idea of the passion, as is presently converted into the passion itself" (576). Likewise the sight of objects that should cause emotion, such as the instruments of surgery, could "excite the strongest sentiments of pity and terror" in Hume, who logically attributes typical feelings to the average patient (or victim) of eighteenth-century medicine (576).

Philosophers argue over whether Hume would have agreed with Adam Smith's views on sympathy in *The Theory of Moral Sentiments*, but in Smith's version, sympathy also often depends on some form of vision. He noted the habit of an audience to move involuntarily with the movements of a performer on a tightrope, and added, "When we see a stroke aimed and just ready to fall upon the leg or arm of another person, we naturally shrink and draw back our own leg or our own arm; and when it does fall, we feel it in some measure, and are hurt by it as well as the sufferer" (2). This bodily mirroring extends to emotion: "The passions, upon some occasions, may seem to be transfused from one man to another, instantaneously, and antecedent to any knowledge of what excited them in the person principally concerned. Grief and joy, for example, strongly expressed in the look and gestures of any one, at once affect the spectator with some degree of a like painful or agreeable emotion" (A. Smith 3). Although neither philosopher claims physical sight as an absolute requirement for sympathetic responses, both clearly mark it as a powerful aid.

Ann Bermingham notes that in the late eighteenth-century, sensibility, or an acute capacity for feeling a sympathetic response, was as much a "way of seeing" as a "mode of feeling", and one that "found in ordinary scenes and events occasions for deep reflection" ("Cottage Door" 1). Scientific and philosophical theories that supported its effects were tied closely not just to Hume and Smith, but also to John Locke, whose empirical philosophy helped push vision to the forefront of the British conception of how humans know and understand the world.[22] Also influential were the optics of Isaac Newton, who revised earlier notions that the eye emitted beams that touched objects and sent back information about surfaces and distances. Touch was still important for Newtonian optics and Lockean empiricism; it just operated in reverse: Newton's idea was that rays touched the eye; Locke's that ideas "impressed themselves on the mind" (Bermingham "Cottage Door" 13). In short, despite empiricism's emphasis on reason, its adherents theorized perception as "a way of being touched by the world" via sight, literally and through its effect on the emotions (Bermingham "Cottage Door" 13). By the time the French Revolution had devolved into bloody horrors, this mode of perception seemed too dangerously emotive to many in England, and English rationality and common sense were elevated over sensibility (Bermingham "Cottage Door" 9).

Curiosity and the visual as it aided and encouraged interest in human relationships within society and within the natural environment appears as a significant factor in multiple large-scale popular movements that begin in the Romantic period and continue through the end of the century. The picturesque craze itself, anathema to the mature Wordsworth, can be seen as partly the result of a new curiosity about nature. Here such curiosity does become rather superficial, concerned as the picturesque is with mere appearances only: William Gilpin, its major proponent and popularizer, famously recommends taking a "mallet judiciously used" to historical Tintern Abbey to improve its outward interest for the eye ("Observations on the River Wye" 62). But Gilpin's guidebooks to picturesque beauty did spark a craze that encouraged Britons to explore the natural world, learning to see it for themselves with the discriminating eye of a painter. Gilpin himself suggests that an appreciation of picturesque landscape can afford healthy entertainment to “engage some vacant minds” who might otherwise travel without purpose, and a “rational, and agreeable amusement” in “an age teeming with licentious pleasure” for all who pursue it (Gilpin “Three Essays” 41, 47).[23] Even as England industrialized, increasing numbers of its citizens learned to see and visually appreciate their changing countryside as landscape. Though often mocked, the picturesque craze may have helped to inspire a more lasting, profounder taste for painting *en plein air* that brought British watercolorists into direct contact with nature and helped “produc[e] the expansive atmosphere for which [these painters] have become famous” (Klonk 101). Ultimately, Gilpin’s emphasis on quick sketching (to be revised later) may have even begun to condition the British eye to appreciate the sketch as a more direct access to the artist’s visual impressions.

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[22] For Locke, vision seemed the most rational and objective sense. See Edney and Crary.

But the craze for the picturesque was hardly the only turn of the century manifestation of curiosity about the visual in the context of burgeoning interest in nature and its relationship to humankind. As Heringman points out, this period has been termed the “second scientific revolution” for its startling gains in knowledge about the natural world (2). Those who use this term typically refer to the more spectacular Romantic-era achievements, including Herschel’s discovery that the universe extended beyond the Milky Way, William Parry’s attempt on the North Pole, Michael Faraday’s work with electricity, and Davy’s isolation of new elements. It is indubitably true that such achievements and the frequent public demonstrations such as those Davy gave – wherein the public could *see* exactly what most published texts still had merely to describe – fired the public imagination (Ross 24).

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[23] Interestingly, while Gilpin makes mildly ethical claims, Alexander Cozens argues in “A New Method of Assisting the Invention in Drawing Original Compositions of Landscape” for the *psychologically* (although he does not use this word) healthy and liberating effect of sketching original (not from nature) landscapes.

Perhaps somewhat less noticed by modern critics, however, but even more widely disseminated at the time, was the persistent nineteenth-century interest in natural history. Before disciplinary boundaries separated aesthetic from scientific work, and split scientific culture into separately defined fields, investigations of the natural world were largely subsumed under the banner of natural history. At once a set of practices and a genre of literature, natural history as the amateur practiced it beginning in the Romantic period involved close observation of natural forms, collection of botanical and zoological "specimens" simultaneously individually interesting and representative of a larger group, and an "unprecedented" torrent of printed reading material (Heringman 6). The hunger for information not only fueled reading, but also increasingly sent amateur naturalists into the outdoors to hunt specimens, take notes, and see for themselves. Gilbert White, a country parson who dedicated years to observing the natural environment in Selborne, and whose *Natural History and Antiquities of Selborne* was first published in 1789, pioneered such outdoors study. Over the first decades of the nineteenth century this field-based model partly replaced in the public mind an older model of indoors investigations via books (Merrill 7-9, Barber 39-40). The point, as White and so many other writers emphasized, was not simply to read about the natural world, but also to go and see it.

As the century continued and the "hard" sciences began to professionalize and specialize, natural history retained its hold on the popular imagination as an amateur enthusiasm, attesting to the continued pull of vision and curiosity. Lynn Barber argues that the "heyday of natural history" began during the Romantic period and extended into the height of the Victorian, from 1820 to 1870 (Barber 13, Merrill 150). Partly because there were never any specialized degrees in natural history at the universities, outdoors naturalist study remained open to amateurs, children, women, and the lower as well as middle classes. One measure of natural history's broad and continuing popularity is the continuing demand for naturalist guidebooks and pleasure reading. For example, J. G. Wood's otherwise unremarkable *Common Objects of the Country* (1858) went to two editions in the first two months of publication; after about three decades Routledge had published 86,000 copies (Lightman 174-5).

Natural history straddled the new scientific-artistic divide, investigating the natural world from a standpoint simultaneously alert to objective (usually visual) fact and infused with human interest. Where Romantic poets could sometimes castigate science for destroying mystery and awe ("we murder to dissect," science "unweaves the rainbow"), and by just a few decades later scientific prose could assert that literature was too unsystematic to be good epistemology, natural history "in general refused to accept this dichotomy, seeing no reason why the best qualities of both pursuits might not overlap. Natural history texts could be both objective and subjective, concrete and human" (Merrill 99-100). A tension between taxonomy and morphology, or the representative and the particular, persisted in natural history writing and practice. But both writing and practice simultaneously emphasized the importance of objective facts *and* wondrous astonishment, precise observation *and* the appeal to the imagination. Typical in this regard is Charles Kingsley's *Glaucus; or, The Wonders of the Shore* (1855), which extols the curiosity of the good naturalist because "he" is

> able to see grandeur in the minutest objects, beauty in the most ungainly… holding every phenomenon worth the noting down; believing that every pebble holds a treasure, every bud a revelation; making it a point of conscience to pass over nothing through laziness or hastiness, lest the vision once offered and despised should be withdrawn; and looking at every object as if he were never to behold it again. (45)

Kingsley then leads the reader on an imaginative ramble by the sea, consistently addressing his audience as if they stand together on the sand. “Follow,” “look,” “see,” Kingsley commands, and then he describes the sight of a landscape, a strange object, or a tiny creature in vivid visual detail, so that the reader’s imagination can present what he or she must visualize instead of perceive (e.g. Kingsley 61-64). The object to which Kingsley points is nearly always both individually remarkable and also a good representative of its species, the habits and habitats of which Kingsley is careful to explain. Always the excitement of curiosity provokes further investigation, which leads to knowledge, which is its own playful reward. Kingsley quotes Phillip Henry Gosse, another major Victorian naturalist writer, sounding much like Davy or Wordsworth: “When once we have begun to look with curiosity on the strange things that ordinary people pass over without notice, our wonder is continually excited” (77). As Merrill writes, “Natural history was aesthetic science, science pursued out of a personal sense of awe and beauty” (79). It retained its hold on the popular imagination alongside the more spectacular achievements of specialized practitioners, and it both responded to and shaped nineteenth-century Britons’ curiosity about the natural world.

The rage for outdoors exploration and for collection extended beyond the study of the indigenous into curiosity about Great Britain’s imperial possessions. As Mary Ellen Bellanca notes, “[f]rom the early nineteenth century on, an increasingly literate British public was steeped in discourse that glorified acquisition of new territory along with new knowledge,” until “[b]y the 1850s, natural science encompassed knowledge from all over the world, a world of which the British Empire at its height controlled 25 percent” (9).

Britons were invested in conquering new territory through (often visual) information as well as military might.

Though wealthy Europeans had long collected odd, exotic, and even bizarre items for their eclectic "curiosity cabinets," Joseph Banks' burgeoning collection at his house in Soho Square marks a watershed in imperial museums in Britain (K. Arnold 16-22, Fulford et al 11-12). Banks accompanied Cook on his circumnavigation of the globe, and came home in 1772 with "a massive haul of things" he had gathered (Fulford et al 11). His botanical discoveries from that voyage and several earlier trips helped make Kew Gardens one of the foremost botanical gardens in the world, and fueled nearly three decades of engraving work, as Banks funded an attempt at a comprehensive, illustrated guide to exotic flora in fourteen volumes (Fulford et al 38). Much of the rest of his "massive haul" was organized and classified into a museum of Pacific culture and natural history that became so famously influential that Britons headed to the Pacific would often visit Banks' collection first, so that they would know what to expect. Natural history, which was itself partly a science of classification, provided the framework for a newly organized sort of collection, in which objects were described and catalogued rather than merely jumbled together (Merrill 76). As Banks rose through the ranks of British society, he also made himself the central node in a growing network of exploration and information: for more than four decades he sent explorers across the globe from his position as the president of the Royal Society in London (Fulford et al 35-43. Following the model that Banks had set, "[v]ery often the point of a voyage was not simply to ship materials to and retrieve commodities from a new world, but to make representations of the world so that others could visit it and know what to do when they got there" (Fulford et al 27). No Romantic himself, nevertheless Banks set the tone for Romantic-era (and later) imperial investigations, which were increasingly predicated on "viewing from a distance" via collections of visually interesting and apparently informative objects (Fulford et al 20).

Objects were hardly the only interesting items that marked British curiosity about empire, however. Travel narratives, scientific studies of animal and vegetable life, ethnographic reports about native peoples, and wild stories about European experiences within native culture were not new genres even in 1800. But innovations in publication across the century, combined with the eventual advent of photographic illustration, meant that this sort of information became increasingly accessible – and demanded – by the reading public (Stetz 25; D. Arnold 26). Maintaining military and political control of territory around the globe meant that engineers, surveyors, cartographers, medical personnel, botanists, naturalists, ethnographers, and other scientific researchers, frequently affiliated with the military, were constantly on the move. Still other British citizens worked as ambassadors and administrators.

All of the above produced narratives of various kinds, including official and semi-official reports and travel accounts that combined ethnographic and zoological information with entertaining stories and "useful facts" – that most Victorian of obsessions. The sheer volume and breadth of published travel narratives from journeys through Great Britain's empire and elsewhere attests to their popularity and to the British presence around the globe: accounts from the period in question range from Elizabeth Craven's 1789 *A Journey through the Crimea to Constantinople* and Mary Wollstonecraft's *Letters Written in Sweden, Norway, and Denmark* (1796) through

Alexander Burnes' *Travels into Bokhara; Being the Account of a Journey from India to Cabool, Tartary, and Persia* (1834), Charles Lyell's *A Second Visit to the United States of North America* (1849), Henry Bates' *The Naturalist on the River Amazons* (1863), and Henry M. Stanley's *How I found Livingstone: Travels, Adventures, and Discoveries in Central Africa* (1872) to Lewis Wingfield's *Wanderings of a Globe-trotter in the Far East* (1889) and Robert Peary's *Northward over the "Great Ice"* (1898) – just to name a smattering. These took a visual turn, even when they were not illustrated. Heavily descriptive, these accounts frequently emphasize the visual in "views," "scenes," or "prospects" (D. Arnold 24). The British gave a great deal of "ocular authority" to the European traveler, in official or non-official capacity, who presumably "brought a discerning eye, a sharp intelligence, and the benefits of education, sensibility, and experience to the spectacle exposed to his or her view" (D. Arnold 24). Curiosity inspired the writing and the reading, both of which were extensive.

Meanwhile, visual images of the literal sort proliferated. Though mapmaking and topography were traditional arts in England, a newly concentrated effort began in the mid-eighteenth century with a map of Scotland intended to aid military control, completed by 1755. The British government then founded the Ordnance Survey in 1791, and promptly began what became a decades-long survey of England and Wales (Bermingham *Learning* 78-81). Meanwhile, drawing for mapmaking purposes became part of the standard curriculum at England's military academies, and even at some private schools whose pupils were destined for maritime or commercial careers. As Matthew Edney points out, mapmaking was crucial for management of a military and commercial empire: "knowledge of …territory is determined by geographic representations and most especially by the map…. To govern territories, one must know them" (1). If this sort of visual knowledge could respond to intense curiosity, it was also deadly earnest.

But topographical and other maps, as well as images of foreign people, landscapes, and architecture, could be commercially lucrative as well as militarily useful in an atmosphere of curiosity. Turn-of-the-century draftsmen such as Thomas and William Daniell in India produced surveys, sketches, paintings, and engravings of exotic scenery that served as military documentation and were also sent back to England to be snapped up by citizens eager for knowledge of strange places and people under British control, and excited to own a visual bit of empire. The advent of photography meant that those who wished to capture foreign "views" for military and/or commercial purposes could do so much more efficiently and (after the invention of the calotype) reproduce them much more easily (Worswick 2). For example, the East India Company hired photographers in the place of draftsmen in 1855, as did local British-run governments during the Raj after the Rebellion in 1857. Documentary-style photography evolved under the aegis of the Company, which desired records of military exploits as well as topographical and archaeological surveys and other projects that were more scientific in nature (Worswick 4). Stereoscopic views and images of exotic landscapes and architecture were popular among English readers in England and abroad, who were eager for "expert" knowledge about the empire, as illustrated by success of such works as the monthly publication *Indian Amateur's Photographic Album*, published in Bombay, and the London-published *One Hundred Stereoscopic Illustrations of Architecture and Natural History in Western India*. London journals frequently brought the efforts of English photographers abroad to an eager British public eye (Desmond 3).

Curiosity and the desire to turn visual information into useful knowledge marked British social engagement at home in growing cities, too, where it could mark discomfort as well as pleasure. In an era when more Britons were less likely to know their neighbors than ever before, the popular pseudo-scientific practice of phrenology and physiognomy promised an almost magical power to know others by their appearances.[24] While phrenology's diagnostic methodology primarily involved touch, to read the physical form of a sitter's head, it also depended heavily on visual illustrations. These included the actual heads of real individuals, reproduced from "portraits and busts (and later photographs)," and also, crucially, diagrams that visually "mapped the various faculties to their cranial regions" (Jonathan Smith 201). Physiognomy, meanwhile, suggested that viewers could know others purely by sight, through such visual markers as dress, facial structure, habitual movements, and expression. These elements could reveal information about the other that ranged from occupation to class to personality and even, potentially, morality. Though not a new idea, physiognomy increased in popularity during the latter decades of the nineteenth century (Pearl 11-12). John Lavater, whose eighteenth-century book became a best-selling nineteenth-century authority on the subject, asserted that physiognomy was "the science of discovering the relation between the exterior and the interior – between the visible surface and the invisible spirit which it covers – between the animated, perceptible matter, and the imperceptible principle which impresses this character of life upon it," as if looking into a person's features could allow one to perceive his or her soul (qtd in Shaw 819). This obsession with the visual as vital clue to inner life took a more sinister turn in the work of Cesare Lombroso, whose criminology promised to identify criminal “types” by their appearance, based on the study of prisoners’ photographs. The Victorian middle class took uneasy solace in the idea that anyone with criminal tendencies walking their cities might be identified by their facial features (Pearl 26). As Sharrona Pearl remarks,

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[24] See Roger Cooter, "Phrenology and British Alienists, ca. 1825-1845," in *Madhouses, Mad-Doctors, and Madmen: The Social History of Psychiatry in the Victorian Era*.

> Physiognomy helped urbanites deal with the simultaneous overload and lack of human information by allowing people to make judgments on the basis of sight. The most important information physiognomy could provide was precisely what was lacking in the urban environment, namely, a system of establishing reasons to trust and, equally important. (Pearl 10)

The Victorians thus gave additional emphasis to an old question predicated on a new awareness of potentially incongruent “interior space” and exterior appearances: how can we know others via the information that sight provides? (Pearl 9).

Though the unknown could provoke fear, it just as clearly elicited wonder and curiosity in the nineteenth century. Beginning with the Romantics, this curiosity was tied closely with vision. As a sensory channel, vision helped Britons notice and appreciate the ordinary and the quotidian as well as the surprising and exotic; as a mode of investigation it provoked further study and led to increased knowledge as well as persistent interest. It provided the means to study, catalogue, and otherwise integrate the foreign with the familiar, itself no less interesting for those with eyes to see. Wonder formed a link between Romantic art and science and increased in influence over the Victorian period. Wonder itself, suggests Fisher, is always both aesthetic and scientific; it provokes the wonderer “[t]o notice a phenomenon, to pause in thought before it, and to link it by explanation into the fabric of the ordinary,” finding the pleasures of knowledge and aesthetic appreciation in the process (55). For Fisher, as for nineteenth-century Britons (I have argued), wonder is always visual – “the outcome of the fact that we see the world”

(Fisher 17). The novels I discuss in this dissertation similarly employ vision and curiosity to work out the human implications of the changing relationships, within society and between humans and the environment, that I have here described.

Vision, Curiosity, and Empiricism

The link between curiosity and vision was inextricable from empiricism. Beginning with the ideas of John Locke, vision seemed to depend most completely on the "pregiven world of independent truth" (Edney 48). It seemed the most reliable avenue for knowledge in an epistemology that held that all knowledge comes through the senses. In the simplest version of this inherited cultural story, the nineteenth-century British knowledge-seeker, especially in science, sought objectivity above all else. This meant that the negation of the influence of the self and of individual perspective, desire, and emotion became "a moral as well as an epistemological virtue" (Levine *Dying* 5).

Modern critics have pointed out that vision did not maintain a monolithic status over the course of the century. As Jonathan Crary notes, changes in the scientific understanding of vision itself inspired new metaphors for knowledge. The older Lockean model compared visual perception to the function of a camera obscura; Crary notes how this "optical device" and "technical apparatus" had a wider life as a "philosophical metaphor [and] a model in the science of physical optics" for "how observation leads to truthful inferences about the world" (27). One effect of the comparison between the camera obscura and the physical eye was to "sunder the act of seeing from the physical body of the observer, to decorporealize vision" (Crary 29), ensuring vision's status as universally objective provider of accurate information.[25] But vision itself was the subject of study increasingly often in the nineteenth century, and its own observers noticed that sight could not be severed from individual physiology. When the act of seeing was returned to the body, and such bodily functions were understood to vary by individual and to be subject to defect and illusion, it became clear that vision was not a passive vehicle for communication of truth but was rather quite subjective and creative. This attention to idiosyncrasies of the human eye represented a dramatic break with the "stable and fixed relations incarnated in the camera obscura" (Crary 14), revealing vision to be a variable and creative interaction between the observer's body and the perceived objects.[26]

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[25] As a metaphor for understanding, the comparison figured the mind as a room in which the observer, an autonomous subject, inspected ideas passing before an inner eye (Crary 43, 46). In both the physiological

Dramatic changes in the situations with which observers had to contend also brought growing visual sophistication. As the decades progressed, "an observer increasingly had to function within disjunct and defamiliarized urban spaces, the perceptual and temporal dislocations of railroad travel, telegraphy, industrial production, and flows of typographic and visual information" (Crary 11). Technological change created new visual sensations, for instance as passengers reacted with surprise to the sight of their image, reflected in the windows of a train, colliding and merging with the bodies of passengers in a train passing in the other direction (Hartley 74). Playful instruments like the thaumatrope, the phenakistiscope, and the stereoscope all began as scientific tools for studying optics and migrated eventually into the public sphere as toys for

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and philosophical versions of the model, even the privileged sense of vision is subject to the rule of reason, which ensures that the visible world is known without possible modifications by an individual's "sensory and physiological apparatus" (Crary 55). Crary notes that the camera obscura could even be seen as an improvement on human binocular vision, representing the advantages of reason's unchallenged rule: "The camera obscura with monocular aperture was a more perfect incarnation of a single point than the awkward binocular body of the human subject. The camera was in a sense a metaphor for the most rational possibilities of a perceiver within the increasingly dynamic disorder of the world" (53).

[26] Perhaps it is this change that allowed J. M. W. Turner to make the very "retinal processes of vision" the focus of his paintings by the end of his career, capturing what it feels like to make sense out of sight information (Crary 138).

manipulating one's own vision, indicating their society's fascination with optical effects produced by the disparity between "reality" as reason comprehended it and actual visual experience. Given this increasing awareness of vision's fallibility and variability, how did it maintain influence within the framework of empiricism?

Often asking some version of this question, modern critics have decried and discredited the nineteenth century's reliance on objectivity and on vision. These critics argue that true objectivity is impossible, and rightly point out countless incidents in which nineteenth-century claims for objectivity have actually served as shields for oppression, deceit, and self-delusion (Levine *Dying* 5-7). From this point of view, vision often comes to take on a rather sinister cast, as the means for maintaining control over a mindlessly entertained, docile society, or as the sense leading most inevitably to cultural fragmentation and artistic alienation. Michel Foucault points out the disciplinary effect of internalized norms of observation on society, while Martin Meisel and Gillen D'Arcy Wood trace the evolution of visual "spectacle" across nineteenth-century British culture, from stage effects to panoramas to illustrated books and other newly sensational media.[27] Vision's, and empiricism's, very claim to objectivity then becomes a willful "blindness to the way knowledge is shaped by determinative contexts" predicated on a will to power that seems naturalized by its apparent objectivity – its claim to represent truth (Garratt 28). The potentials for vision, as objectivity's instrument, to serve as entertainment and as disciplinary force inhere in my discussion above. Yet Chris Otter and others have begun to suggest that ideas about the panopticon, the flaneur, and the spectacle have influenced modern critical understanding of the nineteenth century to a degree far outstripping any actual hegemony at the time.[28]

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[27] See *Discipline and Punish: The Birth of the Prison*; *Realizations: Narrative, Pictorial, and Theatrical Art in Nineteenth-Century England*; and *The Shock of the Real: Romanticism and Visual Culture, 1760-1860*, respectively.

Instead, it may be more useful to nuance our ideas about nineteenth-century empiricism in a more accurate direction. Peter Garratt suggests in a recent work that empiricism as many nineteenth-century Britons espoused it depends on a view of the subject as ceaselessly evolving. From this point of view, the self is always in progress, as new sensory information changes it and new experiences accrete to it. By the mid-Victorian period, Garratt argues, the very identity of the "knowing subject" seemed dynamic and unstable – a "condition of life" and experience (32, 37). All knowledge is therefore subjective: there is no way around subjectivity, and no way to discipline it into objectivity. The knowing subject can know something only by taking a particular perspective on it or, in other words, "occupying a relative position" to it (Garratt 17). Knowledge for the mutable self is always "necessarily circumscribed, conditioned by context, and conceived in terms of relationship" (Garratt 16). Similarly, instruments can aid vision and practice can hone observational skill, but what instrument and practice produce is not a more objective vision but rather a more comprehensive subjective awareness. Furthermore, not only is observation not "correctible," but the attempt to discipline and correct it would actually distort awareness of reality, which is always relational (Garratt 16). The moral and epistemological obligation of the observer, therefore, is to remain aware of relationship, point of view, and context. Indeed, this is a positive good, as reality itself depends on the self in relationship with others and with the natural world. What matters to empiricism – surprisingly, perhaps, from the standpoint of many modern impressions – is precisely the "determinative contexts" of relationship.

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[28] In *The Victorian Eye: A Political History of Light and Vision in Britain, 1800-1910*, Otter notes that the panopticon and the flaneur (both representing alienated/ing influences) dominate critical understandings of vision in this period to a degree much exaggerating their actual influence. He argues that each is a twentieth-century retrospective "fantasy," obscuring the reality that "Perfect, transparent vision of society remained, and remains, elusive, undesirable, impossible, and probably meaningless: Western governments have usually been quite happy to tolerate broad areas of darkness" and that "Flanerie was an exclusive, metropolitan, elitist, narcissistic practice, limited to a select group of writers who seldom used the term flaneur to describe themselves" (5, 7). By projecting exaggerated ideas of these limited trends onto the nineteenth-century British, critics thus obfuscate rather than further understanding of a culture that Otter argues valued visual freedom as much as control.

Following Martin Meisel and Gillen D'Arcy Wood, I would add the more useful idea of "visual spectacle" to the list of lenses through which critics often perceive nineteenth-century British culture. In his *The Shock of the Real: Romanticism and Visual Culture, 1760-1860*, Wood demonstrates convincingly that much Romantic literature was inspired by negative reactions to such entertainments, which trick the eye and stifle the imagination. From increasingly realistic stage effects in the theatre, to panoramas bringing foreign city-scapes to London, to illustrated books that narrated trips abroad through pictures, sensational visual experience does seem to have been on the rise across the century. While this line of argument seems more useful than those Otter skewers, I argue that it is not all that critics should attend in visual culture, either. Instead, beginning with the Romantics but continuing through the century, the British seem to have had an increasingly sophisticated understanding of visual perception that gradually filtered down to popular culture, inspiring imaginative responses in writers and artists along the way.

Against the critical sense that new visual sensations almost always interrupted sympathy, I argue that the ideas they inspired could facilitate it, and that the texts and images I study reveal the yen for visual information to provide new explanatory stories for a culture experiencing rapid change. As Levine puts it, "Novels are not science," but "fictions expose [their] culture's deepest assumptions (or desires)" (*Darwin* 13).

The Story of This Dissertation: Chapter Summaries

Growing Victorian curiosity about Romantic-era daily life, amid nostalgia for an earlier and perhaps pleasanter England, meant that the work of John Constable and Jane Austen held unprecedented public attention in the final decade of the century. As my second chapter explains, Constable and Austen had largely been considered uninteresting in their own time due in part to their ordinary subject matter. Later hagiographers presented both as authoritative visual observers of their past world. Austen's and Constable's quotidian subject matter became not a liability but a virtue for Victorians who sought a story of continuity with an older England, which nostalgia idealized as it vanished. This chapter analyzes *Pride and Prejudice* (1813) and *The Hay Wain* (1821) to argue that Austen's and Constable's illusory qualities were not fully felt until the Victorian period, when the stories author and artist could tell were increasingly valued for their potential contributions to a larger cultural narrative about England's rural past.

The third chapter treats stories that challenged comforting Victorian narratives of correspondence between inner character and outer appearance amid a rapidly urbanizing society. It analyzes the peculiar affect that Victorian and modern audiences have noted in response to Charlotte Brontë's *Villette* (1853) and Lady Clementina Hawarden's photographs of domestic scenes (1857-1864). Novel and photographs transfix and unsettle audiences in similar ways, this chapter argues, because they present counterfactual mental states but frustrate interpretation of factual alternatives. These counterfactuals without actual counterparts cloud clear narration in both photographs and novel. They highlight instead the egocentric error potential in any interpretation of another person via appearances. Hawarden's and Brontë's art can thus be seen as cognitive tools that convey the affect of discomforted (stereotypically Victorian) desire to know the other through visual information. Though this analysis would seem to confirm modern narratives of visual disruption, I argue that the very strangeness of the evasive stories Hawarden and Brontë tell suggests that interpretation via visual information is (and was) so familiar as to seem unremarkable elsewhere.

The fourth chapter explores the implications of the subtitle to George Eliot's *Middlemarch* (1871-1872): "A Study of Provincial Life." As a "study" at the time could be a scientific examination or an artistic sketch, the novel can be seen as an extended naturalist's observation – and narration – of life in a small town. Eliot's visual metaphors, which invite the reader to experiment and observe and also involve the microscope, the naturalist's indispensable tool, bear out this context. Earlier critics have concluded from the novel's attention to varying perspective that Eliot was pessimistic about the possibility of true sympathy. I suggest that the naturalists whose language and techniques Eliot borrows are not dismayed by the variable effects of condition and perspective: they insist, to the contrary, that the skillful observer takes advantage of variable conditions to learn *more*. As Eliot adapts their techniques, her novel does not merely inform the reader that different perspectives can provide strikingly different knowledge about others; it *enacts* this idea. Eliot not only asks the reader to take a naturalist's attitude, her novel itself becomes a kind of variable lens through which the reader sees. In narrating the intertwined stories of the residents in one provincial English town, Eliot practices her readers in finding the best frame through which to view and interpret, or narrate, others. Her story is meant to assist wider narratives of social justice as this leads to harmony.

The final chapter turns to Rudyard Kipling's *Kim* (1900-1901), a narrative of empire. I argue that Kipling, the son of the British curator at the Lahore Museum in India, reproduces the effect of the museum as visual technology – in other words, as a collection of material items that allows both individual scrutiny and panoramic pattern-finding. Such collections facilitate the sense of comprehensive knowledge, but in the context of aesthetic pleasure; like novels, they perform their work as if it is play. In novel form, the museum's visuality – one can look, but not touch – becomes descriptive, using concrete language that brings arcane knowledge about a foreign place and time to life. Just as a museum can serve as a tool for "seeing at a distance," this novel seemingly magically transports an audience through a pragmatic, material, visual collection. Kipling's story performs the playful work of fictional transportation par excellence. As cognitive tool, it offers to its wider British culture the condensed visual fantasy of an age obsessed with exploration and the exotic, with curiosity and wonder. And yet, *Kim* reflects Kipling's imperialism as thoroughly as it does his love for India (in fact, the two may be inextricable). Kipling's failure of empathy in this regard, right in the middle of his great love, points to the dangers inherent in the perspective-sharing work that the play of fiction can enact. If story makes audiences better empathizers, nothing guarantees either that they also become more compassionate people, or that resulting empathy will be directed to ends everyone would agree are moral.

The dissertation proper thus begins, in the Austen-Constable chapter, with an examination of fictional stories' illusory powers in the context of cultural narratives, and moves in the third chapter, on Brontë and Hawarden, to consider the disruptive power of stories that contradict expectations conditioned by such narratives. The fourth and fifth chapters present stories that should have similarly helped original audiences to assimilate wider cultural trends, but now stand in contrast to one another in terms of ends modern critics find palatable.

Methodology

I argue that Romantic ideas persisted into the Victorian period and return in today's ideas about how humans perceive and respond to others. This project is thus most concerned with those aspects of Victorian culture that continue the Romantic interest in vision and sympathy. But it also maintains a concern with how today's audiences respond to this persistently enchanting art. A growing number of critics incorporate insights from cognitive science into this sort of analysis, once squarely within the humanities. Art as human activity, produced and shared by human brains, can through both humanist and scientific study tell us more about what it means to be human. Patrick Colm Hogan states this well: “It is crucial for humanists and scientists to recognize that the arts should not be some marginal area to which cognitive discoveries are imported after they are made elsewhere. Arts are central to our lives…. [I]f you have a theory of the human mind that does not explain the arts, you have a very poor theory of the human mind” (2). As scientists learn to see cognition and emotion as inextricable, so humanists rediscover that shared affective responses offer rich rewards to rigorous study (Thrailkill 15).

Awareness of history, genre, and contemporary response can usefully constrain and propel such criticism. While so far most humanist study utilizing cognitive science has taken a generalist approach to human aesthetics, Alan Richardson called recently for work that analyzes specific art objects or texts within their historical contexts.[29] It is impossible to know precisely how minds respond while processing a work of art or a text. Historical context and reception history can suggest possibilities, as can close reading. I borrow an “if-then” formula from Jane F. Thrailkill’s work on the affect of nineteenth-century literature. In Thrailkill’s formula, the critic does not “posit or require that the ‘ideal reader’ or even the ‘historical reader’ *will* feel” a certain way. Rather, if the reader responds in such a way, which formal analysis and response history suggests, then certain cognitive processes seem at work (Thrailkill 47). In addition to Thrailkill’s formula, cultural context guides my focus on response that would have been likely for a nineteenth-century audience, as well as today’s critic. The argument is by its nature speculative, but so must new inquiries even in science often be.

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[29] See *The Neural Sublime: Cognitive Theories and Romantic Texts*, published in 2010.

To these ends, I have found Dual Coding Theory (DCT) a useful paradigm for speculating on individual differences within patterns of response to texts and visual art. Developed by Allan Paivio, DCT poses that human cognition utilizes "two functionally independent but interconnected systems, a nonverbal system specialized for dealing with nonlinguistic objects and events, and a verbal system specialized for dealing directly with language" (Paivio 33). In other words, the verbal system handles the comprehension and production of language, and the nonverbal system processes what an event or object looks, feels, sounds, smells, and/or tastes like, as well as its affect.

DCT holds that each of these systems uses basic units organized and combined in potentially infinite ways. At the biological level of explanation, these units refer to neural nodes and connections that process or respond to perceived information. At the cognitive psychological level of explanation, it is these units that "generate" language and images in the verbal and nonverbal systems, respectively (Sadoski and Paivio 45). In the verbal system, the basic unit is the "logogen," which refers to any "chunk" of recognized language; logogens can be as small as a letter or a syllable, or as large as a memorized expression that the user repeats as a unit rather than produces creatively at each use. The "imagen" is the basic unit of the nonverbal system. Rather than language, it produces imagery – which in psychological terms refers not just to visual but also to comparable auditory, tactile, and motor simulations experienced in the absence of direct perception.

As "representational units," imagens and logogens must be "activated" by internal processing and/or perception (Paivio 36-37). At the biological level of explanation, activation means that energy movement excites neurons physically connected in a network. At the psychological level, activation occurs in terms of three levels of meaning. A logogen or imagen has *representational* meaning when it can be activated in response to a stimulus: a person recognizes a word or image because he or she has an available corresponding mental representational unit. Learning new words means learning new logogens, which are then among those available for future processes. The second, *referential* meaning, indicates associations between imagens and logogens – the mental connection between a word and an image. If a person visualizes in response to a word, or names an image with language, then these logogens and imagens activate each other across systems. Finally, *associative* meaning indicates connections, or associations, between logogens and other logogens, or imagens and other imagens. For example, when a word brings to mind another word, these logogens have associative meaning. This brief explanation should make clear that activation can occur within a system, as with associative meaning, or across systems, as in referential meaning.

Perception of words or images is thus most direct when it is representational: a word activates a logogen; an image activates an imagen. Referential activation is indirect, because (for instance) a word must first activate a logogen before it can activate an imagen. Associative activation is similarly indirect. Concrete nouns produce the most direct activations, but DCT holds that such connections exist for other classes of words. An abstract word like “success,” for instance, may not have a “direct referent” imagen, but will still evoke associated images from experience (Paivio 46). The connections are simply even less direct: the abstract word activates associated concrete words and then those concrete words activate linked images. Verbs, adjectives, and adverbs follow similar less-direct patterns to activate imagens, since imaging them incorporates a noun (for example, to think of “running” requires one to think of someone or something performing the action). Connections can also travel in the reverse direction, from imagen to logogen, as when a visual memory evokes spoken words. As this suggests, referential and associative meaning (or connections across systems and within systems, respectively) can span sense modalities as well as systems (Paivio 46-47, 50-51).[30]

It follows naturally from this that experience affects meaning at all levels. Direct perception that involves mental recognition (as opposed to merely registration on the senses) requires that incoming sensory information more or less matches an available imagen or logogen from a range of possibilities. The match marks the best fit. These connections are not pre-determined but probabilistic: they can potentially activate a number of possible routes dependent on idiosyncratic experience and context. Both units and their connections are flexible and evolving, changing as we change. Experience builds new units and new connections; recent activation can prime or inhibit future activation. Context guides which among possible candidates are activated as well: for instance, context allows perceivers to understand language with missing or inaudible words when it provides enough probability to complete percept-logogen matches (Sadoski and Paivio 57). An associative framework within which unlimited connections are possible, DCT accommodates error and creativity (Sadoski and Paivio 53-4).[31]

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[30] It is important to note Paivio's caution that the systems, the units within them, and the activation patterns seem to differ slightly between direct perception, when the object or event is present, and mental representation in the absence of that object or event. Perhaps separate but related units exist for processing in perception versus memory. Perhaps the units are "tagged" or "labeled" differently, so that the distinction between activation in the presence or absence of direct perception remains clear throughout processing. Paivio's example of the difference is instructive:

> …a ship seen in the distance "homes in on" a relatively small set of similar ship imagens and a particular imagen is activated when the ship gets close enough to be identified. When asked to picture a ship in our minds, we have a larger imagen pool to draw from and it takes more time before a particular imagen is activated and we can report a conscious image…. The size of the representational pool and the availability of particular representations depend on the breadth, depth, and recency of one's experience with the perceptual domain—in this case, our knowledge of ships. (49-50)

This reference to the activation of concrete imagens in the cases of identification and visualization indicates one way in which dual coding differs from other modern psychological theories about how knowledge is organized within the mind. Unlike many other such theories, DCT proposes no abstract psychological entities. Schema theories, by contrast, organize knowledge according to abstract categories (schemas). Though they derive from experience, schemas represent general knowledge. A schema for an object or a situation is not any particular object or event, imagined or perceived, but rather a group of typical features of that object or event abstracted and compiled. According to these theories, a person thinks about individual objects or situations as instances of this general category. Paivio and colleagues mistrust such abstract concepts on the grounds that they are rather vague, difficult to test for directly, and require the cognizer to perform extra work to create and then "unpack" the abstract schema whenever a cognitive task calls for specifics (Paivio 11-12). By contrast, DCT proposes no such abstract entities; even the most abstract cognitive acts operate with concrete units. These representational units, as I have mentioned, retain their sensorimotor origins in memory and processing. Thus, for instance, a memory of an event is inextricable from what it felt like to perceive it. An imagined object or event retains its concrete, particular identity. Processes as abstract as language comprehension rely on concrete associations, with their specific sensorimotor identities. This is true of both conscious and unconscious activity, direct perception and internal imagery, and sensory and response processes (or input and output).

Even the most abstract text, if its language is familiar, produces mental models by activating verbal contexts.[32] But imagen activation does aid comprehension. Much

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[31] An example may make this discussion clearer. If I have seen a bird before, then even a fragmented outline of a bird will activate a bird imagen. If the shape of a bird is new, exposure (especially repeated exposure) will create an imagen and teach recognition. If I have seen a bird, but not one of this particular species, then I can recognize it as being like my existing bird imagens. Exposure will create a bird imagen for the new bird. Since even individuals within a species vary, even each individual within a familiar species that I see will probably have its own imagen, associated more tightly with one another than would be the imagens for two individuals of different species, who show a wider physical and behavioral variation. Usually, how well I (and each of us) can generalize from an unfamiliar percept to a similar available imagen or logogen in order to recognize that a new stimulus represents a variation on something already known depends partly on individual capability and experience. As Sadoski and Paivio explain it, "we operate for efficiency around… exemplars. A 'good' exemplar… serves as the central tendency in a multidimensional distribution. The other members of that distribution are variants that have been experienced or are interpolated" (47). The exemplar is a particular one, however – not an abstraction inducted from multiple specific examples. The same principle and process holds for recognizing or learning new logogens. Repeated exposure increases recognition and familiarity; the match happens with an increasingly detailed and available representational unit, whether this is imagen or logogen (Paivio 42-43).

[32] Paivio argues that the two distinct systems often work together "to mediate nonverbal and verbal behavior" (13). He writes,

> both systems are generally involved even in language phenomena. The verbal system is a necessary player in all "language games" but it is sufficient in only a few. In the most interesting and meaningful ones, it draws on the rich knowledge base and gamesmanship of the nonverbal imagery system. Conversely, the nonverbal system cannot play language games on its own, but it can play complex nonverbal solitaire. The verbal system dominates in some tasks and the imagery system in others. Thinking is this variable pattern of the interplay of the two systems. (Paivio 13)

As this implies, the significance of DCT for a study of literature and visual images is its ability to capture and predict the richness of associations within and between language and mental imagery. It suggests that one distinguishing feature of literary or aesthetic language is its especial capacity to balance audience attention between stylistic verbal features and rich mental imagery, and as a theory it offers tools for analysis of this balance.

DCT analyzes how meaning can be potential within, rather than fully predetermined by a text: the richness and thoroughness of comprehension depend on the individual and the situation. Readers are active creators of meaning, rather than passive receivers of it. Nonverbal imagery accompanies textual processing

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to a degree dependent partially on the text, and partially on the reader and the context of the reading situation. Readers who activate more associative and referential connections will find a given text richer in meaning, which increases by degrees from basic recognition and "mere" familiarity to thorough understanding and extratextual elaboration. Partly because context and situation influence reading, a community can share meaningful experiences, facilitating communication between members of that community (Sadoski and Paivio 65-67). If, as Sadoski and Paivio point out, this is why dictionaries are possible – because users in the language community agree on roughly stable meanings associated with listed words – it is also why a text can function as a cognitive tool that unites readers through shared affective and imagined experiences. Communities help to create and shape texts, which in turn help to create and shape communities.

Readers create meaning from text through a complex ongoing process of focus and expansion, which continually broadens in association from basic perception and contracts to narrower possibilities from context and environment (Sadoski and Paivio 65). Reading (and meaning) begins when the reader perceives text, either by seeing language or feeling it, in the case of Braille. This is the representational level of meaning: the reader recognizes the text. This is a "bottom-up" process in which the reader responds perceptually to a stimulus; "top-down" processes are those in which context, ongoing interpretation, reader expectations, and the like influence experienced meaning. In the case of a sighted reader, visual text activates visual logogens (a reader reading Braille will activate motor logogens). These logogens are likely chunked at the level of words, but the reader's attention may vary between graphemes, words, punctuation, and phrases or segments. Context or prior reading can "prime" certain related logogens, which means they are more easily activated. A word that is entirely new to the reader will activate letter and letter combination logogens until it is familiar enough to have its own logogen. Activation may spread to auditory-motor logogens for speaking the text or to motor logogens for writing. But at this level, comprehension is basic and rather rudimentary (Sadoski and Paivio 69-71).

At the referential level of meaning, these logogens can activate imagens. These imagens may in turn help prepare the reader for later logogens, or alternatively, raise expectations that later logogens contradict. Such connections become part of the context for the rest of the text, and add to or even create the experience of meaning and richness of comprehension. As Sadoski and Paivio say, "Imagery can form a strong internal context that comes not just a companion to verbal context, but integral with it" (71). The original logogens also activate other related logogens at the associative level of meaning. These new logogens may activate imagens. Imagens associated with the original logogens and the new logogens may activate other imagens, which in turn may activate still more logogens. The modality-specific qualities of the units in both systems mean that activation respects sensorimotor-based organization: logogen associations are hierarchical and sequential, while imagen associations are sets nested within larger sets. These structural tendencies can themselves influence meaning – as Sadoski and Paivio point out, given grammar's reflection of perspective, a tiny change in preposition from "on" to "by" can change a sentence's mental model considerably (79).

This entire process of activation occurs nearly instantaneously, and can be unconscious even as it assists conscious comprehension. For instance, a reader may not consciously experience thoroughly elaborated imagery – or even any imagery – in response to a text even as activated imagens help that reader to understand it more richly. As I have said, the connections are probabilistic, which means they are not pre-determined; they largely depend on an individual's prior experience (which helps to determine possible connections) but may activate in any number of possible ways consistent with that individual's make-up. As Sadoski and Paivio describe it, the activation process is not linear, but parallel: "spreading activation fans out in parallel in the verbal and nonverbal systems and through connections between the two systems" (Sadoski and Paivio 110). The reader forms "tentative interpretations or mental models" that evolve as reading continues and "[f]amiliarity, grammar, verbal-associative contexts, and nonverbal contexts… shape and elaborate the emerging interpretations" (Sadoski and Paivio 110). These models are not abstract; they are integrated conglomerations of the logogens and imagens that the text activates: simulations a reader "runs" in response to the text. Like a reading hypothesis, the mental model both helps to shape the reader's ongoing experience of the text, and also itself evolves as additional experience influences it in turn.

These mental models often incorporate affective response. The strict DCT view of this aspect of reading is that first a text activates a particular logogen that activates associated imagens, which are in turn connected with the somatic experience of emotion. Emotions are not themselves imagens, but are rather associated with imagens in the same way a taste ("sour") is associated with an imagen ("lemon"). However, research demonstrates that verbal concreteness increases the probability of activation and the strength of memories. Paivio and colleagues' research shows that concrete language is second only to pictures for its ability to activate images, followed at a distant third by abstract language. This makes sense given that referential connections between concrete language logogens and imagens offer a more direct route for activation than abstract language, which usually must first activate still other, associated logogens that in turn referentially activate imagens. When concrete language activates imagens, the content of that language is encoded dually, in both language and image. All other factors being equal, concrete language is thus better remembered because it is accessible in two forms. Recall is not just slightly better, but usually *twice* as strong for concrete language. These results hold even when the subjects reported no conscious visual imagery in response to the concrete text (Sadoski and Paivio 61).

The dependence on past experience for activation does not mean that the reader is limited to re-experiencing personal episodic memories only. It means, instead, that to read about an event, an object, or a situation completely unlike anything one has known is to imagine it with concreteness derived from one's own past sensorimotor experience. This means that although I have never been to India, when I read a novel set in India that conveys the heat, the smell of cooking food, and the noise of a bazaar, I can experience not just the beauty of the text but also the world it suggests to my imagination with concrete sensorimotor details drawn from my own experience of hot summer days, of

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Sadoski and Paivio also note that logogens can activate emotions directly in a process "similar to referential processing" but without intermediary images, "although the effect could be mediated by images" (86). As with imagens, emotions can be activated without direct perception. Consistent with the rest of DCT, these logogen-affect connections derive from experience. This may be the exception I noted earlier to the DCT rule that we do not think with emotion. The affect a text evokes becomes part of the contextual mental model that in turn influences a reader's experience of the rest of the text. Like a logogen-imagen connection, a logogen-affect connection involves both systems, which may account in part for its impact.

Indian food, of crowded and noisy spaces. Because these images are not subject to sequential logic, grammar, or textual convention, they can index personal meaning that would be hard to convey in words except reductively. Should I visit India, my imaginative response to a novel set there would afterwards be more particular and easier to access, because I would have logogens and imagens (and associated gustatory and olfactory memories) from my experience in India. But the process of activation itself would be much the same, according to DCT. So far from limits to the imagination, then, DCT suggests a more rigorous method for analyzing imagination’s rich vividness, its combinatory creativity, and its power to produce holistic experiences in response to text that seem more than the sum of their parts, and that can transport readers into other lives.

CHAPTER 2: VIRTUALLY WITNESSING JANE AUSTEN AND JOHN CONSTABLE

In 2003 the British Broadcasting Company unveiled the results of "The Big Read," a yearlong survey to determine the "Nation's Best-loved Book." In the summer of 2005 the BBC Radio 4's *Today* program followed with another survey cataloguing public taste at the millennium, this time to identify the best-loved painting in a British museum. The results of both surveys drew disdain from critics,[33] but the works placing first and second in each are hard to denigrate as representatives of the stereotypically English. The first place winner in "The Big Read" was J.R.R. Tolkien's *The Lord of the Rings*, a tale the author imagined after the First World War "as 'a myth for England', to honour the courage and obstinacy of a small people against evil," while Jane Austen's classic "comedy of love and manners," *Pride and Prejudice*, ranked second (Ezard). In "The Greatest Painting in Britain Vote," English artists took the top spots despite the shortlist's inclusion of foreign artists, with J.M.W. Turner's *The Fighting Temeraire Tugged to Her Last Berth* placing first, and John Constable's *The Hay Wain* second (Belam).

Critics bemoaned the dull predictability of these choices, but if the top four winners seem *now* like painfully obvious picks, "as English to Englishmen, in the national mythology, as Roast Beef" as Robert Miles says of Austen (132), neither Austen nor Constable would have been so during their own lifetimes. Tolkien's sprawling epic and Turner's spectacular painting would have been contenders almost from the moments of creation, so quickly did they seize public attention. But the quieter second place winners have more interesting, because less obvious, trajectories. *Pride and Prejudice* sold a respectable but unremarkable number of copies in its first, anonymous release. Constable could not find a buyer for *The Hay Wain* when he exhibited it in England in 1821 and 1822, and the artist himself was little enough appreciated that he died with the majority of his paintings still in his own possession.[34] If now both novel and painting seem quintessentially English in style, and their appeal derives in part from their inextricability from English national mythology, their eventual canonization was by no means inevitable. One might assert, with the critics, that each owes their cultural status to sheer familiarity, but this becomes a circular argument. Neither Austen's novel nor Constable's painting achieved real fame among their contemporaries, yet now they share totemic cachet as representatives for their time and place. But if Constable and Austen did not speak *to* their contemporaries, why are they now considered to speak *for* them?

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[33] One critic called The Big Read "a silly and vulgar spectacle" because the BBC featured celebrities championing their favorites; others cast aspersions on whether the survey more accurately reflected reading tastes or audience enthrallment with the high-budget film productions benefitting many books on the final list (Tonkin; Ezard). As with the book rankings, critics suggested that "The Greatest Painting" vote just revealed familiarity. The art critic from *The Independent* asserted the list's predictability: "I'm sure the chosen 10 do reflect public taste pretty accurately: sometimes absolutely right, sometimes bafflingly wrong…. I would like to see *The Fighting Temeraire* loaded on to *The Hay Wain*, and them both quietly wheeled off to some nice art dump" (qtd in Belam).

To ask this question is to ask a version of this dissertation's central question: what factors contribute to audience engagement, especially via the visual? Austen's and Constable's paths to canonization are remarkably similar. Early audiences seem to have found each lacking according to aesthetic conventions that privileged the elevating and the interesting. But the success of the Romantic revolution in the arts meant that subsequent generations appreciated art, like Austen's and Constable's, that engaged audiences with ordinary subject matter via active imagination. Furthermore, as many academic critics have noted, Victorian nostalgia for life among the minor gentry in the pre-industrial period motivated new historical interest. Where earlier generations found Austen and Constable dull, Victorians sought both the authoritative information each seemed to offer about past life within a genteel social class, and also a story of continuity with that past. Scholars suggest that Constable and Austen offer the illusion of access to and continuity with a past that Victorians could narrate as specifically English.[35]

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[34] As Wessel Krul says, "In terms of commercial success, the artistic career of John Constable… must be considered a failure" (138).

I add that Victorians may have been likely to find Austen's and Constable's work powerfully illusory because the average Victorian encountered each figure first as a visual authority partly created by his or her respective hagiographer. These personas emphasized powers of keen observation in an age that valued vision as a privileged means to knowledge: Constable and Austen thus appeared expert witnesses to ordinary turn-of-the-century landscapes and domesticity. Cultural narratives and expectations for art doubly predisposed Victorians to appreciate Austen and Constable where earlier audiences had felt indifferent or repelled.[36]

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[35] As Miles puts it, then, Austen's "pastoral" vision of her social class becomes "England's totem of primitive Englishness" when England requires assurance that traditional English life continues – or at least continues to be valued – despite changing landscapes, economic systems, social strata, and/or domestic mores (134). Lionel Trilling notes that part of Austen's appeal may be the sense readers have that "the novels represent a world which is distinctly, even though implicitly, gratifying to eye and to the whole sensory and cognitive system," much unlike the "modern" world (522). Roger Gard attributes her Englishness to her lack of politics, a quality he also ascribes to "Anglo-Saxon culture" (15). Miles notices the paradox of Austen's path to status as "England's totem" and explains it via economics: England did not need Austen's "pastoral" vision until the late nineteenth-century, when the nation's South East financial centers required assurance that they upheld daily English traditional life despite massive change (134). Similarly, John Barrell and Michael Rosenthal situate Constable's calm scenes of rural work as an upper class vision of successful husbandry, where rural workers are satisfied and industrious. See *The Dark Side of the Landscape: The Rural Poor in English Painting 1730-1840* and *Constable: The Painter and His Landscape*, respectively. Ann Bermingham agrees that Constable's paintings "naturaliz[e]" landowners' power over landscape, and its poorer inhabitants ("Redesigning" 238). Such analyses implicitly locate Constable's lasting appeal in his paintings' pastoralism.

[36] Cognitive psychology, which indicates that perception depends on expectations as well as senses, clarifies that internalized convention could indeed disrupt or facilitate reception in this way.

Even early audiences who commented disparagingly on Austen's novels or Constable's paintings tended to note the remarkable illusory powers of each. Constable's paintings seemed fresh and true to life; Austen's story world enveloped readers in conversations that felt real. In later decades, when cultural narratives encouraged audiences to participate in the illusion, commenters expressed enthusiasm for this imaginative involvement. It is true that differences in medium and style separate author and artist: Austen's virtuoso writing provides only the sparest, most essential details of character development and interaction, while Constable's mature technique is coarse and indistinct by comparison. Though his effect of spontaneous composition is as much an illusion, based in long study and hard work, as Austen's apparently effortless prose, Constable's paintings call attention to their creator's brushwork where Austen's writing hides its art. Yet audiences of each must *complete* meaning in a way that depends on a sense of personal involvement and connection with the living presence of the artist.

Cognitive analysis of *Pride and Prejudice* and *The Hay Wain*, as examples of Austen's and Constable's work respectively, suggests that each involves the reader or viewer in an imaginative process that mimics the inductive process. The viewer experiences *The Hay Wain* like Constable experienced the scene; the reader experiences a conversation between Austen's characters in *Pride and Prejudice* as humans experience social interactions. Constable the expert observer appears in his brushwork; similarly, Austen seems present in her narrative voice. Victorians who engaged the works would have found themselves involved in an epistemological process implicitly calling upon shared values of empiricism. That is to say, the magic this art possesses for those who embrace it draws upon the same processes as everyday human functioning, in which we act on uncertain conclusions drawn from experience. This should have been an especially convincing way to produce an illusion for Victorian audiences within a culture that privileged empiricism and the expert observer.

Austen's Early Reception: Cultural Aesthetic Expectations

A brief review of perception can elucidate why Austen's original readers, like Constable's original viewers, were not as receptive as later audiences. Perception is creative, combining sensory information with personal input conditioned by expectations, memories, experience, and wishes.[37] Visual art differs only in that artists have arranged pigments in such a way that the viewer can interpret them using the same unconscious brain processes (Hoffman 6, 12). Reading appears a similar process: the reader responds to the prompts of the text by filling it in, co-producing the work in his or her own imagination. Phenomenological experience is always constructed from a combination of sensory input and individual mental content (Hogan 18, 30, Bruner 219-222).

Thus, cultural expectations for art as individuals within that culture internalize them can affect those individuals' engagement with art works, even at the level of perception. It appears that this sort of expectation helped prevent early audiences from fully appreciating Constable's paintings and Austen's novels, while it encouraged later popular reception. The tone of many early comments suggests that early viewers and readers reacted with perspectives grounded in late eighteenth-century aesthetics, even though Austen and Constable worked during what is now called Romanticism.

Broadly, the eighteenth-century Neoclassical aesthetic privileged art in all genres that elevated the passive audience through the ideal. Art should abstract features from its subject to present the idealized essential rather than the particular. It should appear highly "finished": poetry should be a virtuoso performance; painting should offer a detailed, smooth surface. The best art hid its *art*, presenting the ideal as convincingly as if it were real (Rothstein 309; Abrams 42). Eighteenth-century critic Lord Kames called the Neoclassical mimetic illusion "ideal presence," or the ability to cast the audience into a reverie wherein imagination seems to perceive the subject directly. Kames' notion of ideal presence implicitly depends on imagination to expand the cues from the text or image (Rothstein 309-12).[38] The essential, abstracted and idealized, called upon the audience to

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[37] For instance, we construct what we see: human eyes have evolved to capture certain kinds of information (such as color along a limited spectrum, depth, edges of objects) that the brain can use, and that we experience as sight.

> [T]he full realization in the mind… of the possibilities latent in the finite [art work]. In avoiding the nonessential particular, the artist not only avoided the slavish imitation of sublunary nature, but offered his audience a general proposition which had the power to evoke their artistic complicity. Viewers susceptible to the creation of ideal presence would, when confronting a picture containing a striking essential image, supply from imagination and memory those particulars which made it most meaningful and evocative to them. (Bertelsen 360)

Lesser art attained value through "interest." Readers of novels, not yet considered high art, expected pure entertainment via the salacious and the sentimental (Southam 5).

Austen's style seems largely consistent with Neoclassical aesthetics – a point to which I will return – but her subject matter seems to have been deemed too ordinary either to entertain like the sentimental novel, or to elevate like fine literature (Southam 4-9).[39] Her spare prose provides only the essential particulars, and early Austen readers noted the power of her works to produce Kames' "ideal presence." But expectations for subject matter kept early readers from fully appreciating the illusion. As one female letter writer commented on *Pride and Prejudice* in 1813: "'P & P' I do not very much like. Want of interest is the fault I can least excuse in works of mere amusement, and however natural the picture of vulgar minds and manners is there given, it is unrelieved by the agreeable contrast of more dignified and refined characters occasionally captivating attention. Some power of new character is, however, ably displayed…" (qtd in Southam 8). Another such reader commented of *Mansfield Park*, "It has not… that elevation of virtue, something beyond nature, that gives the greatest charm to a novel, but still it is real natural everyday life" (qtd in Southam 11). For the first reader, Austen fails to evoke interest; for the second, she fails to elevate the reader through the ideal.

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[38] In 1757, proto-Romantic Edmund Burke wrote that spring, baby animals, and "unfinished sketches" "afford a more agreeable sensation… because the imagination is entertained with the promise of something more," suggesting that reproductions gain "power" from the "ability to force the reader or viewer to create the world, in full, to which the signs proper to the art direct him" (Burke 70, Rothstein 319).

[39] "For some nineteenth-century readers, Jane Austen damned herself by the very fact of writing about ordinary people in ordinary circumstances; beyond this point, however well or badly she wrote was irrelevant; she had denied herself the possibility of great writing…. Implicitly or explicitly, [this attitude] accounts for a continuing refusal to consider Jane Austen's novels as serious works of art" (Southam 13).

Both readers recognize that Austen achieves something unusual: she immerses the reader in the world she creates, and makes the characters that appear there seem unusually real. An early review of *Pride and Prejudice* in 1813 ends, "We cannot conclude, without repeating our approbation of this performance, which rises very superior to any novel we have lately met with in the delineation of domestic scenes. Nor is there one character which appears flat…." (324, qtd in Southam 57). Yet, as this and other reviews suggest, readers of all sorts at this time seem to have felt that while in Austen's novels "the commonplace is perfectly rendered… the commonplace is not what we look for in [high] literature" (Southam 9).

Austen's Later Reception: Victorian Nostalgia

For later generations, as critics have noted, Austen's novels presented the British nation with a story about itself that answered a widespread longing for a past that felt like home, even if it was half-invented. At the beginning of the nineteenth-century, most of the nation's population was rural. The local landowner was the center of the community, responsible for providing (or not providing) satisfactory housing, law, education, and employment. With political and economic power residing almost entirely with landowners, "the country house was the symbol and expression of power which with people were most familiar" – the symbol, really, of an entire feudal way of life (Lambert vii). The middle decades of the century saw immense technological innovations that brought England new wealth, as well as a steady erosion of the upper class' long domination. The old estate system began to crumble under the weight of the Reform Bills and the Industrial Revolution, and with it an older way of life (Strong 30-37).

But by the second half of the century a backlash had begun: if these changes meant enlarged horizons and new freedom from old feudal abuses, they also meant factory exploitation, heavy pollution, widespread disease, and bitter poverty for many (Strong 30-37). By the 1880's more than eighty percent of the English population was living in the cities (Strong 29), and aristocratic landowners no longer had the money or political clout to maintain their ancient holdings, many of which went to ruin or were put up for sale, or both (Strong 53). Meanwhile, Victorians were inventing an idealized English tradition of country life, just in time to elegize it. Prominent writers and reformers bemoaned the loss of traditional country life to "the contaminating forces of commerce and urban bustle" (Outka 338). C. F. G. Masterman's popular 1909 book *The Conditions of England* articulated the growing unease of the previous decades this way:

> A few generations ago… England was the population of the English countryside: the "rich man in his castle," the "poor man at his gate"; the feudal society of country house, country village, and little country town, in a land whose immense wealth still slept undisturbed. But no one to-day would seek in the ruined villages

> and dwindling population of the countryside the spirit of an 'England' four-fifths of whose people have now crowded into the cities. The little red-roofed towns and hamlets, the labourer in the fields at noontide or evening, the old English service in the old English village church, now stand but as the historical survival of a once great and splendid past. Is 'England' then to be discovered in the feverish industrial energy of the manufacturing cities? (11-12)

The possibly unsurprising result of new city money and country decay amidst widespread romanticizing of a half-fabulated country tradition was compelling commercialized nostalgia. A minor rage for renovation celebrated new construction that looked "as if it had always been there" (Kelsall 6). The architectural ideal, in that specifically middle class space, the suburbs, was "a kind of country estate in miniature" with gardens and picturesque architectural details that "offer[ed] artfully *constructed* suggestions of rural villages and an earlier, non-urban way of life" (Whelan 17, 59, emphasis in original). Meanwhile getting out of the city altogether, if just for a visit, became more important. Newly affluent urban dwellers desired nothing more than to escape the dirty and immoral city, where they had earned their money, into the country, which was newly represented as the locus of tranquility, independence, and simplicity (Strong 30).[40]

A new national identity with immense "spiritual authority" – one that romanticized an idyllic, rural, domestic, conservative life – was born in the collective nostalgia for a rural past that was being invented in the pages of popular magazines and books even as the real, flawed one convulsed (Strong 33). Magazines like *Country Life*, which began publication in the final decade of the century, targeted the professional urban classes with articles about architecture and gardening, traditional country crafts, sporting pursuits, interior decorating, farming and estate maintenance. Pages upon pages of advertisements – for manor houses, cottages, village homes for rent, weekend getaways – hinted that one could buy a lifestyle along with a landscape (Outka 339). At the turn of the century, "the very idea of an authentic country life was for sale in a way not previously seen in England" during these years (Outka 337-8).

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[40] And they could escape: the railway meant the countryside was increasingly accessible for weekends and sporting trips where city-dwellers could role-play at being landed gentlemen; new money meant the middle classes could purchase the estates of impoverished landowners, or for less money, cottages to renovate with modern conveniences (Strong 40). At the very least, a tourist's visit offered vicarious participation, as the "tradition" of country house visiting continued and intensified.

In this atmosphere of rural nostalgia, Austen's novels offered appealing access to "a landscape, not of objects, of physical features arranged picturesquely, but of social relation. It is… a Burkean, or Tory, pastoral" (Miles 131-2). "Constructed" and "marketed" in the 1870s and 1880s as the "songbird" of a gentrified rural way of life and as "England's totem," Austen's appeal only increased as the century closed (Miles 134). For these readers, the very ordinariness of her subject matter was now a positive factor. As a writer for *Englishwoman's Domestic Magazine* put it in 1866, in Austen's novels "we are transferred at once to an old world which we can scarcely believe was England only half-a-century ago. If it were only for the completeness with which she holds the mirror up to the society in which she lived, they would be of great interest" (qtd in Southam 211). In an 1871 review, reprinted in 1871, 1874, and 1883, Anne Thackeray calls the world of Austen's novels,

> … a country landscape, where the cattle are grazing, the boughs of the great elm-tree rocking in the wind…. The rafters cross the whitewashed ceilings, the beams project into the room below. We can see it all: the parlour with the horsehair sofa, the scant, quaint furniture, the old-fashioned garden outside, with its flowers and vegetables combined, and along the south side of the garden the green terrace sloping away…
> All this time, while her fame is slowly growing, life passes in the same way in the old cottage at Chawton. (168, 173, qtd in Southam 168)

Austen's timelessness, as the Victorians narrated her influence and their connection to her world, derives from her very rural ordinariness. Her status as the authentic recorder of that landscape of rural life and social relations depended on two things: her reception as authoritative observer and her finally fully appreciated powers of illusion.

Austen as Visual Authority in an Age of Visual Epistemology

Keen visual observation was paramount to nineteenth-century British epistemology, which privileged vision as the most objective, and therefore most reliable sense. This importance derived from "the rhetoric of empiricism," which Jules David Law has called a "foundational optical metaphorics" analogizing comprehension and clear vision (2). Of all the human senses, sight seemed to depend most on "the world of pregiven truth" and least on subjective human processing, especially since consciousness uniquely hides most visual processing from awareness (Edney 48).[41] It was therefore the most trustworthy and reliable among the unreliable human senses for gaining knowledge through experience, even if vision itself had begun to seem increasingly fallible.

Unlike Constable's, Austen's "landscapes" are of social relationships in an implied pastoral environment: the famed naturalness of her works rests not on their visual likeness to green nature but on the truth of their representation of human nature. Nevertheless, the rhetoric surrounding her reception in the latter half of the nineteenth century involves frequent elevation of her authoritative, often specifically visual, observation.[42] Her Victorian biography significantly helped to create this visual authority for an age that valued its epistemological possibilities.

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[41] From mapping the night sky, to surveying Great Britain in its entirety, to cataloguing exotic flora and fauna in the colonies, to sketching or photographing cells from microscope slides, to imposing longitude lines on the globe for ocean navigation, nineteenth-century Britons accomplished enormous research tasks using sight. This reliance on sight extended from study of the natural world to the study of others: for instance, physiognomy promised to make even strangers legible to those who could read signs of character in facial structure or clothing. Images seemed to reveal human nature, whether in the abnormal psychologies Hugh Diamond thought he could capture in photographs of mental patients, or the drawings of common facial expressions Darwin included in his tome on human emotions.

[42] Although novels are a non-visual medium, critics often referred to Austen like a visual artist, as when G. H. Lewes calls her "one of the greatest painters of human character" in *The Book of Authors* (402).

Austen was born less than a year before Constable, in December 1775, but died well before him, in July 1817. She enjoyed more popular success than he during her lifetime, short as it was, but she was not a bestseller, and she was "not immediately acclaimed as… a writer of peculiar Englishness" (Miles 132).[43] Except for a small "highbrow" audience, "after her death… her popularity seems to have declined almost immediately" (Southam 18). Her nephew James Edward Austen-Leigh published a *Memoir of Jane Austen* in 1870 that changed this, giving life to an Austen persona that captured public imagination. Like Constable's, Austen's persona became more famous than her works, and her powers of visual observation were key to her reputation.

Austen-Leigh famously presented Austen as "dear Aunt Jane," a spinster of unimpeachable morals who tossed off classic novels in odd moments snatched from domestic duties.[44] The biography constructs Austen as a sharp-eyed observer peculiarly suited by a kind of homespun expertise for her novels of village gentry. Austen-Leigh presents her writing activity as continuous with her home life "in the general sitting-room, subject to all kinds of casual interruptions," but these interruptions are everywhere reinforced as the fodder for that writing (81). It is Austen's engagement with her intelligent family, her immersion in domesticity, and her intimacy with a small circle that make her so perceptive an observer of village life, and "Every village could furnish matter for a novel to Miss Austen" (qtd in Austen-Leigh 117).[45]

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[43] The first edition of *Pride and Prejudice*, a run of about 1,500 copies, sold out between January and July 1813, and went to two more editions by 1817. These numbers do not include readers using circulating libraries. Even so, this was a respectable performance, but it could not compare with a true blockbuster like Scott's 1817 *Rob Roy*, which sold 10,000 copies in two weeks (Southam 4-5).

[44] The second edition of the biography, published in 1871, for the first time also included Austen's drafts of "Lady Susan," "The Watsons," and the chapter she deleted from *Persuasion*; Kathryn Sutherland notes that these writings "challenge" Austen-Leigh's characterization of his aunt by their inclusion, contradicting his presentation of her "novels as the effortless extensions of a wholesome and blameless life lived in simple surroundings…. [to] reveal that the artlessness of the finished works is the result of laboured revision… rather than unconscious perfection" (xv).

In fact, like Constable, the artist sequestered in England, Austen as "Aunt Jane" is free of influence from the wider world and secluded within an entirely domestic, entirely English lifestyle; her biographer presents her as thus uniquely positioned to record such a life. "I doubt whether it would be possible to mention any other author of note," Austen-Leigh writes, "whose personal obscurity was so complete" (90). Having taken pains to present her as an author who writes only of what she knows, Austen-Leigh therefore also demonstrates her perfect suitability for capturing domestic English life within her class as it was once. He testifies to her accuracy of observation in the novels, noting "my age renders me a competent witness" to establish

> …the fidelity with which they represent the opinions and manners of the class of society in which the author lived early in this century. They do this the more faithfully on account of the very deficiency with which they have been sometimes charged – namely, that they make no attempt to raise the standard of human life, but merely represent it as it was…. These writings are like photographs, in which no feature is softened; no ideal expression is introduced, all is the unadorned reflection of the natural object; and the value of such a faithful likeness must increase as time gradually works more and more changes in the face of society itself. (116)

The *Memoir* catalyzed a comparative flood of critical reviews, and her public personality changed further as critics styled her a truly natural genius (Southam 28, Miles 134).[46] She became even more remarkable as an observer due to her lack of formal apprenticeship; her utterly artless works began to seem a kind of transcript of reality from this artist who could not help but (almost photographically) reproduce what she saw.

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[45] Austen-Leigh consistently locates her novels in her personal experience: "She was always very careful not to meddle with matters which she did not thoroughly understand" (18).

[46] A few reviewers of the biography challenged this myth of dear Aunt Jane, but they seem to have been largely ignored by a public and a professional elite who preferred the myth (Southam 6).

Underlying this hagiography the emphasis on observation continued. She is frequently ascribed almost supernatural powers of sight, as when a review of the *Memoir* in the *Spectator* describes her portrait in the front matter: “The little head is carried with great spirit, with a certain consciousness of seeing rapidly beneath the surface of life, and with an air of enjoying its own rapidity of vision” (qtd in Southam 163). Here her power of sight becomes almost visionary: observation moves beyond watchfulness to an ability to discern inner qualities. Even critics reluctant to bestow the mantle of high art praise her observation. *Macmillan’s Magazine* notes in 1884, “She possessed one literary instrument which she used with extraordinary skill and delicacy – the instrument of critical observation as applied to the commoner types and relations of human life” (87, qtd in Southam 184). Critics who challenged the mythic persona still positioned Austen’s powers as specifically visual; while George Pellew objected to the public adulation of a natural genius half-created by the critics, he also wrote “But one rare faculty she possessed, that redeems her work from insignificance, -- the faculty of describing accurately what she saw. She anticipated the scientific precision that the spirit of the age is now demanding in literature and art” (47, qtd in Southam 177). Victorian hagiography presented Austen as a keen observer of daily rural life among the minor gentry, now so interesting. This “scientific precision” in observation and description provides an additional key to her illusory power.

Cognitive Analysis of Austen in Context: Clear Seeing and Clear Knowing

Partly because empiricism considered that knowledge was conditioned by perspective, as I have discussed in the introduction, nineteenth-century epistemology emphasized the importance of “virtual witnessing,” that cognitive artifact developed by late seventeenth-century British researchers following Robert Boyle. Knowledge could not be taken as truth unless multiple “eye-witnesses” corroborated its observation, as in an experiment (Shapin 487). This produced a problem for natural philosophers working alone, isolated from collaborators and away from public trials: how could a single experimenter secure eyewitnesses? Boyle’s innovation was virtual witnessing through precise description: “the production in a reader’s mind of such an image of an experimental scene as obviates the necessity for either its direct witness or its replication,” though such replication could be performed from the description if desired (Shapin 491). Readers could “witness” the experiment “virtually” through “their realization in the laboratory of the mind and the mind’s eye” (Shapin 491). Boyle’s prose provided such descriptive clarity that readers could envision his actions and thus “observe” his experiments.[47] As Steven Shapin explains this cognitive artifact, virtual witnessing was both a “*literary technology* by means of which the phenomena produced by [the experiment] were made known to those who were not direct witnesses; and a *social technology* which laid down the conventions natural philosophers should employ in… considering knowledge claims” (484). The reproduction of an experiment in the mind’s eye meant that that reader could share the experience of inductive reasoning – the scientific process – with the researcher-writer (Tucker 7).

This emphasis on simple language and rich description continued in the nineteenth century in fantastically popular naturalist prose. Victorian natural history writers described their subjects with such detail that their readers could picture specimens and procedures with clarity, even as they likewise exhorted readers to go out into the field or sit behind the microscope and see for themselves.[48] Natural history writers thus took on the mantle of individual authority as visual observers and also recruited readers as virtual witnesses, whose subsequent work could corroborate, correct, or augment existing knowledge about the natural world. Natural history writing simultaneously set up the writers as visual authorities, popularized scientific knowledge through appeal to the visual imagination, and established a social relationship uniting writer and readers in epistemic communities privileging vision as a means of knowledge.

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[47] He also took care to present himself as a trustworthy writer and experimenter, reporting his failures as well as his successes to suggest honesty, and adopting a plain style that seemed modest and objective even as the writer sought to describe richly and thoroughly (Shapin 494-497).

Given the prevalence of natural history writing and "popular science" in general during the mid- and later nineteenth century, it is not surprising to find Pellew commenting that his age expected "scientific precision" in visual observation and description. But imagination remained key: like Romanticism, nineteenth-century natural history appreciated the ordinary and the quotidian, and made an explicit virtue of audience participation. Neoclassicism privileged ideal presence, but preferred the finished work that hid its created ontology; by contrast, Romanticism valued the process of creation because it engaged audience imaginations. Where Neoclassicism elevated reason, wholeness, and the ideal, Romanticism allowed instinct, fragmentation, and the ordinary. Instead of a passive, "receptive" audience, Romantic theories of mind postulated an active participant in perception (Abrams 58). Romantic art could be fragmentary, spontaneous, and expressive in part because this would better engage audience imaginations. Such “unfinished” work also seemed to put the audience in touch with the creator, because it was closer to the original spark of inspiration.

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[48] Typical in this regard is Philip Henry Gosse, who claims (in the third person) that he has attempted "to set down simply what he himself could see," which he then invites the reader to "gaze" upon, and narrates with such clarity that the reader can indeed seem to "see" (*Evenings* iv, 77). His "pen-pictures" appeal to the imagination, but he asserts their factuality as well, for "Precision is the very soul of science, -- precision in observation, truthfulness in record" (Gosse *Rambles* v, vii). Gosse conveys the truth of what he has seen with such precision and particularity that the reader can see, and therefore know, it as well. Readers were encouraged to make their own study, however, and even sometimes exhorted to report their findings to the writer, as when John Quekett asks readers of his *Practical Treatise on the Use of the Microscope* to send him "any hints bearing on matters relating to the" instrument and its use in the study of natural history (ix).

That cultural expectations for art had changed, to emphasize the importance of both visual precision and attention to the imaginative possibilities inherent in the ordinary, is evident in Victorian comments on Austen. In addition to her “scientific precision” and the authentic vision she allows of turn-of-the-century life, commenters also praised her work specifically as it enabled her to engage readers’ imaginations. One such review, in *Macmillan’s Magazine* in 1884, proclaimed:

> It was her possession of the qualities of condensation that made Jane Austen what she was. Condensation in literary matters means an exquisite power of choice and discrimination— a capacity for isolating from the vast mass of detail which goes to make up human life just those details and no others which will produce a desired effect and blend into one clear and harmonious whole…. And if to this temper of self-restraint you *add the imagination which seizes at once upon the most effective image or detail and realises at a glance how it will strike a reader…* you have arrived at the component parts of such a gift as Jane Austen’s….” (89-90, qtd in Southam 185, my emphasis)

If Austen’s subject matter failed to meet earlier expectations for elevation or interest, her style was at least closer to Neoclassical elevation of spare, restrained perfection. But this allowed her novels to stoke later readers’ imaginations, too. In the context of a culture that expected descriptive clarity, her use of details came to serve the purposes of virtual witnessing as they might originally have served ideal presence – and were now also appreciated for the light they shone, both imaginative and precise, on ordinary subjects.

Cognitive analysis suggests that the Victorian impression of “scientific precision” may have been served in another experiential way as well: the details of Austen’s novels call on many of the same inductive processes humans use to read others in daily interactions. Regularly we notice details about others’ dress, behavior, speech, and body language; we assign these details to patterns and use them to draw conclusions about others' inner lives. Since conclusions are often hard to confirm, we operate on conditional hypotheses that we revise as we go. Which details we notice, sometimes because our own expectations and desires prime us to notice them, will affect the kinds of hypotheses we make (Palmer 178). Austen's novels uniquely deploy limited cues to reproduce this process – one that should have been particularly convincing for nineteenth-century readers trained to associate observation of detail with special insight.[49]

Much good work has been done on Austen's novel techniques using cognitive studies;[50] here I will narrow this wide field to focus on her famously real characters and by extension on her narrator, as this narrator can take on the role of a character. Her characters stand as one of Austen's most realistic components. [51] Yet she does not often describe these characters at any length. Instead, Austen chooses the essential particular and leaves the rest of her characters' appearance and personality up to the imagination: Elizabeth Bennet has "fine eyes" and a sharp wit; Jane is pretty but "smiled too much;" Mr. Bingley is "good looking and gentlemanlike." Readers get merely the "general effect," but this produces "distinct impression[s]" (Bertelsen 370).[52] Moreover, if this general effect arrives in spare, essentialized, and therefore rather Neoclassical prose, rather than the typical Victorian abundance of detail, it also focuses on details more concrete than abstract. Readers hear about specific aspects of appearance and behavior: eyes, smiles, tics, habitual items of clothing, and typical exclamations, like Lydia's oft-repeated "Lord!" (Bertelsen 370). DCT clarifies that the more concrete such references are, the more quickly they will evoke reader associations, and the more memorable they will be. Austen's Neoclassical prose pares virtual witnessing descriptions down to the bare minimum, but in its very isolation of details, provides those most calculated to make evocative and lasting reader impressions.

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[49] Immersion in fictional reading, also variously called "transportation," "make-believe," and "absorption," has come under psychological study in recent years. Psychologist Keith Oatley compares the experience of art to running a simulation using the imagination instead of a computer, in "a kind of guided dream" ("Meetings" 441). As I have indicated, the reader co-produces the world of the novel from the necessarily incomplete prompts of the text, accepting its laws for the duration of reading (Ryan 91-94). As Marie-Laure Ryan puts it, "Simulation is the reader's mode of performance of a narrative" (113). While the simulation runs, we give substance to its environment and life to its personalities, the props of its world. We push our beliefs about its fictiveness to the background, but our emotions respond to the narrative much as they would to a true story: "simulation makes [the fictive] temporarily true and present," while the background knowledge that this is all make-believe remains available on some level to allow us pleasure in the experience even of negative emotions (Ryan 156). This also helps to explain how we can experience real emotions with and for characters we know are not real. Readers seem to differ in the degree to which they want extensive detail provided by the text as well as in the detail of their own constructions, which investigation suggests run the gamut from generally to clearly visualized (Ryan 120). Regardless, it is in the gaps, however wide they may be, that the reader's imagination has room to work.

[50] See Lisa Zunshine's comments on Austen in *Why We Read Fiction: Theory of Mind and the Novel* for a discussion of Austen's unique use of free indirect discourse and multiple levels of intentionality. For Austen's use of contemporary theories of brain injury, see Alan Richardson's "Of Heartache and Head Injury: Reading Minds in *Persuasion*." For more on Austen's presentation of minds, see Kay Young's *Imagining Minds: The Neuro-Aesthetics of Austen, Eliot, and Hardy*.

[51] The issue of realistic characters is not precisely the same as the question of immersion, but rather, both can be considered to produce and be facilitated by readerly engagement with the text. Realistic characters can help a reader feel immersed, and an immersed reader is probably more likely to find the characters she meets in a text realistic.

Via their dual coding in both verbal and non-verbal channels, Austen's characterization thus takes unusual advantage of the reader's imaginative participation in the creation of her story worlds: the description triggers a reader's memories of both the character's actions throughout the novel, and also experience with similar personalities in real life and in other fiction. For example, Austen writes of Mrs. Bennet that

> She was a woman of mean understanding, little information, and uncertain temper. When she was discontented she fancied herself nervous. The business of her life was to get her daughters married; its solace was visiting and news. (3)

This is indeed a short description of one of the novel's major supporting cast, but the reader will remember Mrs. Bennet's consistently silly speech throughout the first chapter, and may also be reminded of people she knows, or characters she has met in other fiction, and will use these memories to flesh out her understanding. Since we never know any other minds, fictional or nonfictional, completely, the reader constructs her perception of Mrs. Bennet using much the same process she uses to produce hypothetical models for an actual acquaintance: from inferences on the basis of limited information (Palmer 200). In this way Austen's highly connotative details use a familiar process to allow us to find people we already know in her pages. In Virginia Woolf's words, Austen "stimulates us to supply what is not there. What she offers is, apparently, a trifle, yet is composed of something that expands in the reader's mind" (197).

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[52] Lance Bertelsen suggests that Austen is thus like contemporary portrait painters who experimented with "suggest[ing] the essential 'effect' of the original while allowing the audience to project onto that generalized form the particulars derived from their experience of the character" (362).

Meeting Austen Herself: Cognitive Analysis Continued

Austen's story in *Pride and Prejudice* is told, as are her other novels, by a famously perceptive, ironic narrator, whose speech calls on similar inductive processes of inference. We might expect this narrator to interrupt a sense of presence in the story world, by reminding readers that the story is fiction.[53] However I suspect that Austen's narrator is a foundational pillar supporting the firmament of her story world: an integral part of the inductive process. The shrewdly ironic narration is consistent from the first sentence: "It is a truth universally acknowledged, that a single man in possession of a good fortune, must be in want of a wife" is, it is soon evident, not a truth necessarily held by anyone other than Mrs. Bennet (Austen 2, Deresiewicz 503). The narrator's knowing tone and implied invitation to the reader to laugh along is established immediately as part of the simulation, rather than as an interruption to it.

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[53] Research shows that such interpositions between audience and story can easily disrupt immersion, as when whisperers in a movie theatre disturb the concentration of other viewers (Green 321).

Keith Oatley suggests adding a third term to the standard literary studies distinction between the events of a story and its discourse, to refer to the reader's personal associations with and judgments of a text.[54] As he says, understanding Austen's irony relies on this work; it requires the reader to recognize that a statement has multiple possible interpretations. While precisely how to take the narrator's hints is up to the individual, readers have to make these decisions for the narrative to work and the narrator to come to life (Oatley *Dreams* 46, 72). This sort of inference from indirect cues mirrors the cooperation of conversationalists in real life; even face-to-face conversations run on many other cues besides words.[55] Similarly, we construct "hypothetical versions of the minds" we meet in fiction, revising them as we go (Palmer 177). Some research suggests that having to construct this sense of cooperation with a narrator actually increases, rather than decreases reader comprehension (Bortolussi and Dixon 428-429).

In fact, the sense we have that this is not a novel in which events tell themselves, but one in which a perceptive narrator who is highly aware of human foibles conveys a story, may actually increase our sense that the story itself is real. The illusion the novel offers is one not of simply witnessing events and personalities, but of witnessing them as told by a narrator who tells the truth. The simulation incorporates not just the visualization of people and observation of minds, but also the sense of a narrator that we can trust. As when Austen's narrator notes of Mrs. Bennet that she "attended [Jane] to the door with many cheerful prognostics of a bad day," hoping rainy weather will further her matrimonial hopes by forcing Jane to stay at Netherfield (22), the irony consistently demonstrates that the narrator perceives human nature clearly, down to private motivations, rationalizations, and faults. It invites readers to share that vantage point.

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[54] This is the Russian Formalist distinction between the fabula (event structure), the fictional events in chronological sequence, and the syuzhet (discourse structure), which includes the events but also the instructions about "how to turn the events into a story" – how to run the simulation (Oatley *Dreams* 69).

[55] In daily interaction with others we regularly form working hypotheses about their thoughts, operating on these conjectures until we receive new information.

If Victorian readers then tended to conflate this narrator with the author herself, the public perception of Austen as an expert observer may have only increased their predilection both to find Austen-as-narrator an authority, and also to enjoy the story as a truthful glimpse of the past world its story seems to reproduce. Austen uses the voice of a perceptive teller to construct a compelling but clearly narrated world – one that is all the more compelling because it is related by a speaker whose perceptions the reader must trust implicitly in order to share her irony. It is no wonder so many nineteenth-century readers commented on feeling as though they became a part of the novel's limited social circle. As Anne Thackeray put it in her 1871 review, which conflates Austen's powers of illusion with her nostalgic appeal, "we seem not only to read [her novels] but to live them, to see the people coming and going: the gentlemen courteous and in top-boots, the ladies demure and piquant; we can almost hear them talking to one another…" (162-163, qtd in Southam 166).

Constable's Early Reception: Cultural Aesthetic Expectations

Constable's early reception was chillier than Austen's. Because he painted landscapes, his work was destined to seem less important during the first decades of the century than paintings of historical or mythological scenes. Academic art circles, which scaled landscapes lower in importance when they lacked historical or mythological themes, thought landscape paintings should at least show "picturesque" beauty, or views that offered pleasing variety. Constable's images thus failed by several of the most important Neoclassical standards, being neither ideal nor interesting in this sense, though even the earliest critical accounts note his paintings' peculiar power of illusion. The early consensus among many reviewers was that his subject matter was "incapable of engaging the intellectual faculties or of probing those mysteries which were the prerogative of High Art" (Ivy 5). Constable's landscapes of rural life were also – not always, but often – too georgic in the representation of orderly productive agriculture to be strictly picturesque, a category that usually called for ruined cottages and ragged peasants.[56]

Furthermore his handling, or brush technique, was unusual: early critics reproached Constable for his lack of finish, commenting that his paintings looked too much like sketches to be exhibition paintings. Over his career, his technique became increasingly expressive, so that even in the finished paintings his movements remain visible: a viewer can see where his brush dragged through the paint, where he scraped or rubbed away layers to reveal the ground and even the weave of the canvas, where paint has hardened standing up, where he left globs or splashes or tiny spots. Often he would use a palette knife to add flecks of paint, especially but not exclusively on foliage, to "create an effect of shimmering light and movement" (Cove "Materials" 512).

In an era of high finish, these techniques puzzled and repelled reviewers, who recognized the "force and power of his paintings" but did not know how to assign them artistic importance (Lyles 39). They ridiculed his highlights as "Constable's snow" (Cove "Materials" 513). Because evidence of the painter's work called attention to the ontological status of the painting as an artist's creation on a flat surface, for early viewers it could negate the illusion. For instance, Robert Hunt (one of Constable's more sensitive reviewers) wrote in *The Examiner* in 1812, "Mr. CONSTABLE has much originality and vigour of style, but bordering perhaps a little on crudeness of effect" (363). An 1822 reviewer of *The Hay Wain* commented, "If the vigour, freshness, and truth of effect, apparent in every part of the work, were united to a little more neatness of execution, the picture would be perfect" (qtd in Ivy 92). When such reviewers commented on the naturalistic impact of Constable's paintings, they seem not to have considered that this effect depended on the very treatment they denigrated (Ivy 47-8).

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[56] Dismayed critics also noticed that he infrequently varied locations; one reviewer wrote in 1825 that Constable "seems to have a peculiar affection for the dullest of subjects, and to be unable to quit them" ("British Institution" 67). In a period when paintings hung in public exhibitions had to compete in close quarters, Constable's friend John Fisher noted of one of his early paintings, "It is most pleasing when you are directed to look at it; but you must be *taken* to it. It does not *solicit attention*; and this I think true of all your pictures" (qtd in Leslie 40). His landscapes, which did not elevate the mind with subject matter considered "intellectual," were also just not sufficiently eye-catching according to the standards of the day.

Constable's Later Reception: Victorian Nostalgia

As with Austen, however, Constable's images offered later generations material for narratives of cultural nostalgia. The growing popularity of landscape photography, more affordable and accessible than paintings, attests both to this widespread Victorian nostalgia and also to the growing appeal of once "uninteresting" British landscapes. These photographs both documented a way of life that was passing, and elegized it romantically, paradoxically commodifying it by making it (at least seem) available to the middle and lower-middle class consumer. England was presented as rural, agricultural, stable, tranquil, orderly. Typical idealized landscape photographs excluded all notice of agricultural upheavals (of which there were plenty), focusing instead on "ancient manor houses and gardens, views of an unspoiled landscape depicted through the seasons, ordinary countrymen at their toil and the gentry engaging in country pursuits" (Strong 36). Despite the variety, many images from this period are unified in that they "exud[e] a lyrical romanticism," "conjur[ing] up" visions of "a lost countryside in which the honest craftsman had practised his skills and passed his life within the security of an unchanging village community… guided by the landed classes who dominated local affairs as their natural right" (Strong 21, 36-7). Yet this lifestyle was now accessible to the non-landed classes, who could afford a postcard or a book of photographs.[57]

Constable's paintings of harmonious rural work and agricultural landscapes were well suited to this kind of popular nostalgia. His mid-century biographer Charles Robert Leslie makes an explicit virtue of the fact that Constable never traveled outside England, positioning him as a specifically British painter. Writing about an age when professional and amateur painters frequently traveled for their scenery, Leslie says that

> Travelling is now the order of the day, and it may sometimes prove beneficial,—but to Constable's art there can be little doubt that the confinement of his studies within the narrowest bounds in which, perhaps, the studies of an artist ever were confined, was in the highest degree favourable; for a knowledge of atmospheric effects will be best attained by a constant study of the same objects under every change of the seasons, and of the times of day. His ambition, it will be borne in mind, was not to paint many things imperfectly, but to paint a few things well. (314-15)

His accuracy of observation of these "few things" is confirmed by the inclusion (among others) of comments from Constable's brother and a plowman from Suffolk, both of whom testify to the truthfulness of what Constable has depicted in his scenes of rural England. Leslie quotes Constable's own testimony that it was *these* scenes that "made me a painter" (qtd in Leslie 93) for "I was born to paint… my own dear old England; and when I cease to love her, may I, as Wordsworth says, 'never more hear/Her green leaves rustle, or her torrents roar!'" (qtd in Leslie 110). After his death, Leslie's biography began the public work of establishing him as indeed "the most genuine painter of English landscapes that has yet lived" (79). Subsequent treatments take their cue from Leslie's work, repeating his anecdotes to demonstrate Constable's accuracy of observation; by the final quarter of the century this authority has flowered into a peculiarly English vision.[58]

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[57] Victorian landscape photographer Andrew Pringle, well-known for his publications in *The British Journal of Photography*, asserted in 1882 that the goal of such photographs was not just to convey visual truths but also spiritual ones: the ideal is "so to imitate that our imitations, while presenting so far the same impressions to the eye as visible nature, may carry with them a feeling of what is not perceptible to the bodily eye, but must, from the nature of man, be sensible to the mind" (Pringle, qtd in Green-Lewis 42). They should not only record the present moment for posterity, but provide "imaginative access to the past" (Green-Lewis 44). Photography in this vein was an effort at preservation, romanticization, and commercialization; viewing thus became acts of "belonging" to the culture being preserved and celebrated, and "owning" the scenes that now a viewer could keep on a coffee table or carry on the train with her (Green-Lewis 40). If "the idea of England too was for sale," the purchaser of a magazine like *Country Life*, or a series of postcards representing rural life, could own a little piece of "true" England, and through it, participate in "a mystified but collective fantasy of the past as home" (Green-Lewis 45-59).

As the century progressed, Constable's paintings gradually became more accessible to the general public, who were otherwise snapping up cheaper landscape photography.[59] This increase in public access was accompanied by an increase in critical literature positioning Constable as a specifically British painter, with interest to a nostalgic public. John Ruskin's public distaste for his work, and Leslie's public rejoinders, must have drawn some attention during the middle decades of the century. But Richard and Samuel Redgrave offered one of the first extended treatments of Constable's *art*, in addition to his persona, in their 1866 *A Century of Painters of the English School*. It is in their pages that Constable begins to wear the mantle of full-fledged nationalism as part of his public appeal: "His art is purely and thoroughly English," write the Redgraves, "English in subject, English in feeling, English in treatment and execution" (382). Repeating the idea begun with Leslie's biography that Constable was both an unusually excellent observer and also free of the influence of any "school" or "manner," and therefore best equipped to reproduce the "feeling of truth" in his natural scenes, they assert: "Look at any or all of his pictures and see how England rises before us" (387-9). This commandment is followed by an extended descriptive catalogue of varied English scenery, and another paean to Constable's authority as a specifically English painter of true English landscape: "Such is our English pastoral scenery; such Constable played in in his infancy, and painted in his manhood" (387).

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[58] See for example James Smith's (1853) *Lights and Shadows of Artist Life and Character*, which repeats the sketching episode at George Beaumont's that Leslie records, to show what Smith calls Constable's "persevering study of nature" (208), or the Art Journal's (1855) "British Artists: Their Style and Character" series, which led off with Constable as one of the preeminent English landscape painters because of his "fidelity to nature" (10). In 1871 Joseph Sandell is still utilizing anecdotes from Leslie, including West's approval of Constable, in *Memoranda of Art and Artists, Anecdotal and Biographical*.

[59] As Ian Fleming-Williams and Leslie Parris point out, the average Victorian in 1850 who wanted to see "a Constable" would have had to do some work to find one (36). If she were very, very lucky, she might find a copy of *Various Subjects of Landscape, Characteristic of English Scenery*, the set of twenty-two mezzotints that David Lucas had engraved for Constable, published in small runs in 1830 and 1833. She would be slightly more likely to find an 1843 edition of the *Life*, which included the same mezzotints. Four prints of additional large Lucas engravings after Constable's landscapes had been published by 1850, and became his most popularly accessible and therefore most recognizable works: *The Cornfield* and *The Lock* in 1834, *The Young Waltonians* (or *Stratford Mill*) in 1840, and *The Rainbow* (of Salisbury Cathedral) in 1848.[59] But if this average Victorian wished to see an original, she could have visited the National Gallery in London, which displayed two: *The Cornfield*, donated by friends of Constable's in 1837, and *The Valley Farm*, given by a collector in 1847. Otherwise she would have had to have known a purchaser or been connected to one of Constable's own circle, with access to the family house at 16 Cunningham Place. Gradually Constable's paintings became more accessible to the middle classes as the century progressed. In 1857 the Sheepshank donation to the South Kensington Museum (later the Victoria and Albert) included a handful of Constables; these had been followed by a permanent loan of the full-size sketches for *The Hay Wain* and *The Leaping Horse* in 1862. Beginning in 1871, works by Constable appeared in the Royal Academy's winter exhibitions almost every year (Fleming-Williams and Parris 72). But the most enormous influx of his work into public access occurred in the final two decades of the century, as Constable's children gradually died, bequeathing a breathtaking number of works to the nation, and as his grandchildren rapidly sold the remainder at auction (81).

Much of the literature that followed picked up this louder strain of nostalgia and nationalism that the Redgraves had sounded, making Constable's heritage and style the twin poles of his appeal. As an updated version of *The Lives of the Most Eminent British Painters* noted in 1880, Constable's art "is above all genuinely English, locally English even…."; she later notes his "scientific knowledge" underlying in his observation and reproduction of clouds (192, 199). Always underlying this appeal, for both style and heritage, is his status as authoritative observer. As Heaton puts it,

> Many things that we have passed by unheeded in our country walks become noteworthy to and beautiful to us after we have seen them truthfully recorded by art; so, although Constable for the most part merely records, and does not, like the greatest landscape painters, give us a new revelation of nature, we shall be likely

> to find enough in his art to occupy our minds, as we shall in that of every artist who has expressed, simply and honestly, truths that he has seen for himself without the aid of the spectacles belonging to another master. (192)

A decade later, art critic P. G. Hamerton follows a related trend the Redgraves began in suggesting the appeal both of his sketches and of his sketchy handling in finished pictures, "which makes them richer and more suggestive than work done with mechanical exactness" (166). He notes that Constable "was British to the backbone" and later adds, "The chief interest of the studies is that they show the manly and straight-forward spirit in which Constable went to nature" (167-169). As more Constable paintings appeared to public interest in the 1890s, a relative flurry of popular books followed. A beautiful new edition of Leslie's *Life* was published in 1896 with new illustrations of Constable's work, while Charles John Holmes wrote the first real attempts at art historical analysis of Constable in 1901 and 1902 (Fleming-Williams and Parris 104-109). Like Austen's, Constable's popular appeal to nostalgic Victorians lies in his very ordinariness, now narrated as authentically and specifically British.

Constable as Visual Authority in an Age of Visual Epistemology

Also like Austen, Constable's popular Victorian reputation began with his biography – especially during the earlier years when fewer of his paintings were available to the public – and conditioned Victorian audiences to find him an expert observer. When Constable died suddenly on March 31, 1837 at the age of sixty, he had hardly enjoyed the fame his works have since garnered. Constable's fellow artist and close friend Leslie published the aforementioned *Memoirs of the Life of John Constable Esq, R. A. Composed chiefly of his letters* in 1843, in an effort to begin to rescue Constable's reputation; a cheaper revised edition followed in 1845. Essentially the only book-length treatment of Constable for decades, this "became the standard image" of the artist, "achiev[ing] for Constable what he had failed to achieve for himself; he became widely known, better known in fact than his paintings" (Fleming-Williams and Parris 30-31, 35).

The Constable of Leslie's 1845 biography is serious, industrious, sensitive, and often wittily penetrating in his comments about his own and others' failings, though Leslie silently smoothes his pricklier prose and frequently protects the guilty by redacting names. He is an unacknowledged artistic genius, wholly dedicated to his art, and above all a perceptive observer of nature.[60] As Leslie presents him, Constable's genius is founded on his persistent, patient, precise observation of nature, which is also the reason for the sad lack of public appreciation during his lifetime; Leslie writes, "to fail in attracting general notice" is proof only that people have grown so used to mannerism and servile imitation that they "do not know how to estimate" art "so simple and natural" (23). In this biography Leslie is the first to publish the famous words from a private letter that have since come to define Constable's public persona:

> For the last two years I have been running after pictures, and seeking the truth at second hand. I have not endeavoured to represent nature with the same elevation of mind with which I set out, but have rather tried to make my performances look like the work of other men. I am come to a determination to make no idle visits this summer, nor to give up my time to common-place people. I shall return to Bergholt, where I shall endeavour to get a pure and unaffected manner of representing the scenes that may employ me. There is little or nothing in the exhibition worth looking up to. *There is room enough for a natural painter*. The great vice of the present day is bravura, an attempt to do something beyond the truth. Fashion always had, and will have, its day; but truth in all things only with last, and can only have just claims on posterity. (qtd in Leslie 16)

As Constable would later put it, "When I sit down to make a sketch from nature, the first thing I try to do is, to forget that I have ever seen a picture" (qtd in Leslie 307). Like

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[60] Leslie also adds that he was equally socially discerning, and "seldom failed to penetrate the real characters of men through the disguises of manner" (305).

Wordsworth inventing a new poetics, or the researcher seeking virtual witnesses, or the naturalist writing to inspire the visual imagination, or Austen as the Victorians saw her, Constable seeks to record what he *sees* rather than what artistic convention dictates.

To this end, Constable's activity throughout his life as Leslie reports it indicates his consistent, even reverent immersion in the natural world he sought to record. In an excerpt from an 1815 letter to Maria, the woman who became his wife, Constable confesses that he has lost touch with news of the outside world completely, because as he says "I live almost wholly in the fields, and see nobody but the harvest men" (qtd in Leslie 62). Leslie notes that he would often sit so still and stare so intently at a scene that once when he got up he found a field mouse in his pocket (307). Late in Constable's life, Leslie reports, he and others observed similar habits in the artist's routines:

> He rose early, and had often made some beautiful sketch in the park before breakfast…. His dressing-table was covered with flowers, feathers of birds, and pieces of bark with lichens and mosses adhering to them, which he had brought home for the sake of their beautiful tints. Mr. George Constable told me that while on the visit to him, Constable brought from Fittleworth Common, at least a dozen different specimens of sand and earth, of colours from pale to deep yellow, and of light reddish hues to tints almost crimson. The richness of these colours contrasted with the deep greens of the furze and other vegetation on this picturesque heath, delighted him exceedingly, and he carried these earths home carefully preserved in bottles, and also many fragments of the variously coloured stone. (Leslie 258-9)

The artist's activities are reminiscent of the amateur natural historian collecting specimens in the field – of color rather than creatures.[61] The artist's own writings also attest to his alert eye, with his various scattered observations on the changing foliage, on "Father Thames… scattered over with swans" (qtd in Leslie 257), and on skies, saying in one letter "I can hardly write for looking at the silvery clouds" (qtd in Leslie 245).

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[61] Like the quintessential nineteenth-century naturalist, Constable seeks to observe nature for himself. Indeed, Leslie reports that a friend noted Constable's "own way of close observation" in Gilbert White's habits and recommended *The Natural History of Selborne* to the artist (qtd in Leslie 85).

Though Leslie almost never describes any of Constable's images (and when he does, there is very little to convey to a reader what the painting physically looks like) he includes testimony from those who did appreciate Constable's work to convey his paintings' uniquely naturalistic effects. Leslie himself writes of one of Constable's views from Hampstead Heath that "I know no picture in which the mid-day heat of Midsummer is so admirably expressed" (79), and includes a mention of Fuseli's famous comment that Constable's paintings made him want his umbrella (316). Constable himself reports in a letter that another viewer says "he breathes the open air in my pictures, they are more than fresh, they are exhilarating" (qtd in Leslie 163). Leslie's biography thus presents an artist purposefully observant of the natural world, succeeding (if unacknowledged) in his attempts to convey impressions of living landscapes with freshness and immediacy.

But if Constable is insistent on any good landscape artist's need to observe nature closely and for himself, he is equally insistent on the need for long and dedicated training of hand and eye. Leslie records Constable's comment in his second lecture at the Royal Institution that "A *self-taught artist* is one taught by a very ignorant person" (qtd in Leslie 338). Patient dedication to studying the works of other artists marks Constable's activity from the first chapter of the biography, and the senior artist's lifetime of acquired knowledge is later demonstrated by Leslie's inclusion of notes from Constable's lectures covering the history of landscape art. In those lectures Constable also argues consistently that even art that seems the work of a moment, capturing the most transitory of atmospheric effects, requires both a long history of study and a patient application of skill; the master artist who has achieved facility from long and continuing study wisely utilizes this mastery to help him capture a fresh impression with every painting.[62]

Constable's famous assertions comparing painting to science are consistent with the artist's long study and patient observation. Leslie includes in a list of Constable's memoranda a quotation he had copied from naturalist Gilbert White: "Without system, the field of nature would be a pathless wilderness; but system should be subservient to, not the main object of, our pursuit" (qtd in Leslie 299). In Constable's own words, "painting should be *understood…* as a pursuit, *legitimate*, *scientific*, and *mechanical*" (qtd in Leslie 299-300) and can be "considered as a branch of natural philosophy, of which pictures are but the experiments" (qtd in Leslie 355) in part because, like the trained scientific observer, the landscape artist depends upon his internalized system to help him record what he sees first-hand with his own eyes. Constable is presented as the expert observer of England's everyday natural world at his time. His work, once too dull for interest and too ordinary for the ideal, is now both authentic and scientifically precise.

Cognitive Analysis of Constable in Context: Clear Seeing and Clear Knowing

Such scientific precision in an age privileging vision relied on drawing as much as on verbal description.[63] By the early years of the nineteenth century, drawing was an amateur hobby, a social accomplishment, and a useful ability: learning to draw was essential to a well-rounded nineteenth-century education. It was a crucial skill in the portfolios of cartographers, architects, engineers, craftsmen, seafarers, geologists, military officers, botanists and natural historians, and of course professional artists. Learning to draw in many cases also entailed learning to see and record the right degree and kind of detail. As Ann Bermingham has noted, drawing conventions developed in a fashion roughly consistent with the evolution from Neoclassical to Romantic aesthetics.[64]

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[62] As Constable commented in his fourth lecture to the Royal Institution: "…in reality, what are the most sublime productions of the pencil but selections of some of the forms of nature, and copies of a few of her evanescent effects; and this is the result, not of inspiration, but of long and patient study, under the direction of much good sense" (qtd in Leslie 355).

[63] Shafer notes Boyles' careful use of engraved line drawings in his texts to promote virtual witnessing.

Over the last decades of the eighteenth into the nineteenth century, William Gilpin taught countless amateurs to sketch according to picturesque rules, which were based on classical landscape conventions. While he encouraged a new enthusiasm for observation of the natural world, Gilpin's books emphasize general effect over detail: "the province of the picturesque eye is to *survey nature*, not to *anatomize matter*…. It examines *parts*, but never descends to *particles*" (*Three Essays* 26). Since part of the fun of picturesque sketching lies in showing views to friends, Gilpin advocates second drafts with clarifying compositional features and "a little ornament also from figures" (*Three Essays* 66).[65] What is most important is neither fidelity to the actual scenery nor precisely rendered observations, but the overall impression and effect. The effect of the composition should correspond to a Neoclassical harmonious ideal even if, in Gilpin's treatment at least, the drawing was not as highly finished as an exhibition oil painting.[66]

But with Romantic wonder over the ordinary and increasing interest in natural historical specificity, closely observed and naturalistically rendered detail grew increasingly important in sketching. For instance, where Gilpin advised his readers in 1792 that “Among trees, little distinction need be made, unless you introduce the pine, or the cypress, or some other singular form” (“Three Essays” 78), in the first few decades of the nineteenth century at least six different drawing masters published drawing books that taught amateur sketchers to detail different species of trees (Bermingham *Learning* 114-5).[67] As the century progressed and Romantic ideas took hold of popular imagination, sketching convention moved even farther along the spectrum towards close observation. This could take two forms: the “universal” but precisely rendered details of natural historical and botanical illustrations, and a more artistic, yet still closely observed, attention to the visual effects resulting from accidents of perspective and condition. Drawing could be expressive, capturing idiosyncrasies of perspective; meanwhile sketches and unfinished drawings seemed closer to the moment of artistic inspiration and thus better able to aid audience participation in artistic perception.[68]

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[64] See *Learning to Draw: Studies in the Cultural History of a Polite and Useful Art.*

[65] Already by the turn of the century, artists were reacting with disapproval to Gilpin's lack of finish and emphasis on general effect: drawing master William Marshall Craig called Gilpin's technique a "disease of the pencil" (qtd in Viscomi 35).

[66] This is one reason why Alexander Cozens could recommend composing landscapes using random ink blots for inspiration rather than any actual scene: the drawing master uses his "powers of abstraction and his knowledge of form" to arrange blots more or less randomly, according to general ideas about composition, and the amateur student then uses the blots as inspiration (Bermingham *Learning* 97).

Constable’s style is in some ways the apotheosis of the second, artistic form, incorporating a “scientific precision” of effect within its exploratory attention to contingencies of weather, time of day, and perspective. For the Victorians, increasing elevation of closely observed effects of perceptual processing over the ideally composed manifested itself diversely, for example in admiration for Turner’s sprawling masterpieces that captured the subjectivity of perception and in Pre-Raphaelite hyperrealistic detail (William Holman Hunt, for example, supposedly visited the shore of the Dead Sea precisely the time of his setting for *The Scapegoat*, purposefully to ensure that he captured lighting conditions correctly (Bronkhurst 153-154).) And it meant that as Constable's subject matter became more interesting for its nostalgic appeal, his technique itself also became interesting for its imaginative possibilities as a record of an expert observer's perception. His technique now seemed to allow virtual witness: the illusion of experiencing the painting as Constable himself experienced the scene.

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[67] Gilpin had not been without his detractors, who criticized the picturesque popularizer for his use of signs that called attention to themselves and lacked intrinsic connection to the thing they represented. Craig thought sketch marks should avoid notice as marks: they should be “as transparent a transcription of the referent as possible” (Bermingham *Learning* 109). Gilpin’s and Craig’s ideas can thus be seen as two positions along the Neoclassical end of the spectrum: where Gilpin seeks a harmonious general effect through attention to composition rather than precise detail, Craig prefers realistic depiction using natural signs, universally recognizable as their referents, which disappear in favor of the represented scene.

[68] For more, see Klonk. Bermingham.

Cognitive analysis deepens appreciation for Constable's achievements in reproducing these effects. Constable's images offer the viewer the sense of experiencing the painting as the painter experienced the natural scene. In this way, like Austen's novels, they provide a kind of "virtual witnessing," in which the viewer follows an inductive process. Even early viewers commented on the naturalistic appeal of Constable's paintings, although their internalized expectations seem to have prevented them from full comprehension of its causes. Most simply, of course, his paintings maintain a perspective that locates the "body of the spectator" at the "center of projection," opening up the sense that the landscape continues beyond the frame (Ryan 3).[69] But his use of perspective is merely necessary, not sufficient, for the full effect of the illusion of presence in a painting like *The Hay Wain*.

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[69] Each physical object in an actual scene reflects light in every direction, but human eyes perceive only those reflected rays that follow a path directly into the pupils, meaning that farther objects appear smaller, and objects whose reflected rays are blocked by other objects will be occluded from vision to the degree that they are blocked (Livingstone 103-104). Translating a three-dimensional world into a two-dimensional representation is harder than most non-artist twenty-first century viewers probably realize. Artists since the Renaissance have been inventing methods to help them see in two dimensions: time-honored techniques include framing a scene with a mirror or a gridded screen, or staring until the brain systems that produce the awareness of location and depth tire after a moment or two (Livingstone 104). Constable is rumored to have utilized versions of both. The field mouse episode suggests Constable's staring habit, and a rumor persists that he used a framed piece of transparent glass to help him compose (Bermingham *Ideology* 220).

Image removed for copyright reasons

Figure 1: John Constable, *The Hay Wain*. 1821. National Gallery, London.

Constable's unique technique is in fact crucial to the illusion. He takes advantage, probably from experimenting with paint, of the physical properties of human vision. Commenters often noted that where Constable's handling is "splotchy" up close, it will resolve into unified, vivid images from farther away.[70] This is true to a degree: the size of photoreceptors, the retina cells that translate light into information for the brain, limits visual acuity. Resolution of a paint splotch (or any fine detail) requires that multiple photoreceptors perceive it: if it becomes small enough, with distance, that only one photoreceptor picks it up, then the eye cannot resolve it from other splotches (Applegate S548). Splotches of different color can seem to merge, producing a shimmer between irresolution and distinctness (Livingstone 172).

However, Constable's reproduction of light and movement has additional causes. Constable's spots of "snow" are probably not merely contrasting colors with their surroundings, but also contrasting in luminance. Luminance is the measure of "perceived lightness" relative to the brightness of surrounding objects (Livingstone 37). The receptor cells in human eyes and the neurons in human visual cortexes are more sensitive to high contrast in luminance than they are to gradations, and the greater the luminance contrast, the greater the sense of depth (Livingstone 108-109). The spots of brightness on foliage, for example on the smaller trees on either side of the Stour in *The Hay Wain*, make the leaves stand out to varying degrees, with some receding and some extending to catch the light. High contrast between light and dark leaves signals depth to the visual system, aiding the image's illusion (Livingstone 108-109). Additionally, wherever a semi-repetitive pattern appears in Constable's foliage, we perceive volume and perhaps movement, because the brain cannot settle on a match between the two slightly divergent positions of each detail in each eye.

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[70] Early reviewers suggested, wrongly, that there is a "correct" distance at which to view a Constable painting (Ivy 48). Constable wanted the public to be able to examine his textured surfaces from up close, as well as view them from a distance, as his pleased comments after exhibitors lowered his paintings in the Paris Salon make evident (Lyles 39).

Wherever details seem jumbled, his paintings will produce a different kind of "illusory conjunction" (Livingstone 74) assisting the impression of a transient moment. Human vision is the sharpest in the center of the gaze; acuity decreases dramatically with increasing periphery. Usually we are not aware of this difference because we use peripheral vision to detect what to focus on with central (or foveal) vision. While foveal vision provides fine detail, peripheral vision is responsible for the "big picture," or context for that detail (Livingstone 68). Objects seen with peripheral vision will be not be blurry so much as imprecisely located, so they can seem to combine. As a viewer leans in close to study one area of *The Hay Wain*, other "splotchy" areas seen in peripheral vision will resolve. Because they resolve differently every time the viewer moves her eyes, the image will seem like the capture of a transient moment as the eye really sees, with the central clarity and peripheral imprecision of a glance or a memory, based in part on how the viewer creates a scene initially and recreates it with every act of remembrance (Livingstone 75-77). When we remember a view, that memory is constructed from a few salient details situated within a general whole. Constable's paintings can suggest the effect of memories because his technique partly reproduces how the human visual system, feeding into the brain and memory, works.

Constable's images activate the imagination and increase the sense of depth in other ways. Where his details are imprecise, as in the features of the boy in the wagon in *The Hay Wain*, they frustrate stereopsis.[71] Normally, each eye returns visual information from a slightly different angle, and the brain uses the differences to perceive depth. This means that even a photograph will ultimately fail in reproducing a complete illusion of depth, because the eyes receives identical images from it. But when the details of a flat image are slightly blurry, the brain depends more on other cues, like perspective and occlusion, to determine depth. Thick paint that stands up from the surface, like so much of Constable's, can provide such a cue because the neurons in the visual cortex are more sensitive to abrupt than gradual changes. Thus even the shallow discontinuity provided by a thick visible line of paint will signal depth, and "contribute disproportionally" to the overall perception of three-dimensionality (Livingstone 140-143). Furthermore, viewers' perception of imprecise forms will depend partly on their imaginative response, based in memories and expectations. The face of the boy in the wagon may look, though perhaps below conscious awareness, like someone the viewer has seen.

Meeting Constable Himself: Cognitive Analysis Continued

Constable's brushstrokes, the visible evidence of his work, are therefore crucial for the illusion of presence when it works. As John Gage notes, "The terms [Constable] used for the movement of nature: fresh, blowy, sparkle, found their equivalents in the movement of brush or pencil" (29). The vigor and sensitivity of his brushstrokes index his emotions. Much research in cognitive science suggests that humans understand emotion by mirroring it, both when they perceive emotion directly and when they hear or read evidence of it in language. Could an indexical demonstration of emotion in a brush stroke produce such a mirroring, in viewers trained in drawing and painting like educated nineteenth-century Britons were, by suggesting the movement of hand and brush? The visible strokes are Constable's lingering presence, facilitating the experience of that work as direct contact with the landscapes he represents, and in a sense with the artist as the conveyer of those landscapes as well. Their illusion offers the viewer the sense that he or she experiences the painting as the artist experienced the scene, recreating his vision.[72]

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[71] Sarah Cove notes that, at the time Constable was painting, "The public… expected a high level of detail and realistic depiction of the foreground staffage, the figures and animals that invite close inspection…" ("Painting" 63).

Seeing Romantic landscapes: Late Victorian Perception and Reception

Examining common public and critical responses over the centuries in this way, to speculate on their cognitive underpinnings, provides a useful look into the way Constable's painting and Austen's novel produce illusions by stimulating inductive processes. In perception "bottom-up" (from sensory information to cognitive understanding) processes twine with "top-down" processes as the viewer matches incoming sensory information with memory, expectation, and experience. This seems to be why cultural expectations interrupted early appreciation for Constable and Austen's work. Later, when cultural expectations for art had changed, Victorians who encountered either Austen or Constable first as authoritative observers through their public personas – and who wanted to maintain the sense of narrative continuity with the past via apparently authentic glimpses of it – seem to have been predisposed to experience their works like virtual witnesses. This illusion was always latent; cultural expectation affected how far readers and viewers entered and enjoyed it. That by the final decades of the nineteenth century, Britons admired Constable's *preparatory* sketches as much or more than his finished paintings indicates the thorough success of the Romantic revolution in aesthetics.

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[72] I am indebted to Dr. Joseph Viscomi for this phrasing.

If their shared artistic legacy was as expert observers, and their works seem to capture a vanishing England, then Victorian audiences conditioned to approach those works as relics would also be predisposed to find them the "real thing": magically illusory glimpses of the way rural Britain really appeared when each was created. Austen is famous for her polished prose, Constable for his comparatively "messy" surfaces. But both use masterfully chosen cues to elicit an increased imaginative response from their audiences, who participate in the creation of the illusion via a process of induction that mimics, and runs on, daily human function. This illusory power comes to full fruition in audiences who seek authentic visions of a vanished past.

A look at late Victorian tourism offers a final clarification of the Victorian canonization of Austen and Constable as authoritative observers. Nicola Watson argues for the importance of studying literary tourism (in which I here include artistic tourism) as "indicators and records of that otherwise most elusive of things to pin down, how readers experience and live out their reading" (*Literary Tourist* 8). Victorians seem to have found Austen and Constable themselves in their work. The touch of the creator does linger in painting and novel, suggested by Constable's visible strokes and the subtle persistent awareness of Austen's story-teller, increasing the illusion of simulation guided by a Prospero unparalleled in expert witnessing. Late-Victorian pilgrimages to "Austen land" and "Constable country" suggest that audiences who responded to this lingering presence sought traces not just of a rural British past but of author and artist in their landscapes. In the final decade of the century, tours of Constable's scenery in Suffolk and Austen's homes in Hampstead began in earnest – an industry that still flourishes today.

Constable's growing public presence in museums and at auction combined with new ease of travel near the end of the century to turn the area around Flatford and Dedham into an increasingly popular tourist destination as the original scenes of Constable's paintings. [73] In response to the public's increased desire to see the original scenes from Constable's paintings, Cook's began offering a coach tour titled "A Visit to Constable's Country" in 1893, and the Great Eastern Railway Company also began running arranged tours (Fleming-Williams and Parris 112). In 1900 *Pall Mall Magazine* published a typical article offering the experience of one such traveler, which serves as a virtual tour, a practical itinerary, and a commentary on the interest in "Constable Country." Its author, Frederick Wedmore, testifies that he had long been an enthusiast of Constable's work, but he did not fully appreciate "the art and truth of the master" until he traveled to Suffolk (437). Providing the name of his hotel and his itinerary, Wedmore then details his movements with an extended description of the scenery he views, including records of the time of day and the light (as any good Constable enthusiast should note). Satisfied that what he sees looks sufficiently like Constable's paintings, Wedmore asserts that he has "found Constable" himself in the landscape (437),.

For Austen, too, readers who felt transported an older England were beginning to desire to travel to see "her" in her own places.[74] Interest in visiting her "homes and haunts" was solidly part of popular culture by the turn of the century, and has increased since (Watson lecture).[75] T. E. Kebbel's 1885 article for the *Fortnightly Review* conflates the existing village of Chawton, the village as it was in Austen's day, and the experience of reading her books in a way that became typical for visitors: "the scenes, the houses, and the classes of society," he writes, "which we find in her delightful stories are exactly those with which she was familiar at home; and it is impossible to walk through the village of Chawton without feeling that we are in the presence of old acquaintances to whom we were introduced in the pages of *Mansfield Park*, or *Emma*" (264).

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[73] Suffolk was known as "Constable country," at least to a select few admirers, as early as 1832, according to an anecdote in a letter Constable shared and Leslie later included in the biography (232). As I have mentioned, increasing public access to Constable's paintings and sketches was accompanied by an increase in critical literature addressing Constable.

[74] As *Englishwoman's Domestic Magazine* from 1866 describes her appeal, "One of the greatest charms to us of Miss Austen's novel is the complete change of scene they afford: we are transferred at once to an old world which we can scarcely believe was England only half-a-century ago. If it were only for the completeness with which she holds the mirror up to the society in which she lived, they would be of great interest" (qtd in Southam 211)

As with visitors to Constable Country, those who made the pilgrimage to "Austen land" sought to discover a recognizable countryside in which something of Austen herself lingers. In *Jane Austen: Her Homes and Her Friends* (1902) Constance Hill retells the story of Austen's life through recounting her own travels to each of Austen's homes. Along the way, a deep familiarity with Austen's novels, her nephew's *Memoir*, and the edition of her letters published in 1884, allows Hill to weave together the description of her own impressions with imaginative reconstructions of what Austen herself and her family members would have seen. Hill, like Wedmore finding Constable, sees not just Austen's raw materials but Austen herself. On locating the ballroom where Austen would have danced, Hill describes the room as it is ("mouldering," stacked with hay) and how it was ("A chandelier… hangs in the middle of the room…"), and finally brings in Jane herself: "Amidst that gay company there is one figure around which all the interest of the past is gathered. Let us glance for a moment at Miss Jane Austen as she enters the ballroom” (54). Hill’s Jane Austen looks like Emma Woodhouse, so that her own mental images of Austen and one of her heroines conflate. This imaginary sight seems to be standard for visitors who go to find Austen in her homes; as Kebbel had written of Chawton earlier, “He who cannot do the rest for himself and rehabilitate Jane Austen’s house as it was during her living occupation of it, had better not visit it at all” (266). Kebbel’s implication is that Austen occupies her haunts even posthumously, and so she seems to for all those who, like Hill, account themselves one of Austen’s *Friends*.

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[75] Watson indicates that literary tourism was becoming a popular pastime in the final decades of the nineteenth century, but it most often centered either on poets whose local scenery seemed to invest their poetry with visual significance, or on novelists who set their books in a real place. Austen, being neither, was the subject of fewer pilgrimages than she might otherwise have been; her name is more often not included in the tourist guides that were appearing over this period (lecture).

This is, as Watson has aptly termed it, an attitude of “nostalgic belatedness” (*Literary Tourist* 13), in which the visitor imaginatively overlays a physical scene with personal emotion and memory, simultaneously viewing the present and the past. It is not hard to find continuities with today’s tourist activity. Modern travel guides continue the rhetoric: the 2011 version of Frommer’s *England* hails “Constable Country” in Suffolk as “one of the most beautiful, unspoiled areas left in southeast England” (Porter and Prince 554), while the tourist webpage for Winchester suggests that the reader “Visit the landmarks of the author’s life in Winchester and Hampshire’s surrounding countryside to get closer to the ‘real’ Jane Austen” (“Things to do”).

It seems likely that this desire and its fulfillment depends on much the same combination of perception and imagination as immersion in a Constable painting or Austen novel, where artist and author linger to be met in their visions. As sociologist Erving Goffman put it, “There seems to be no agent more effective than another person in bringing a world for oneself alive” (41). The Romantic poets elevated this imaginative life-giving act into an art form with its own conventions when they invested the natural world with human consciousness and then found the numinous breathing within it. Lit by imagination, an Austen novel or a Constable painting flicker into life like magic windows on the past. Today's tourists who, like their Victorian forebears, seek Austen and Constable in the British countryside indicate both the continuing hegemony of Romanticism, and also the power of well-loved art to inspire persistent enchantment.

CHAPTER 3: READING REFLECTIONS IN LADY CLEMENTINA HAWARDEN'S PHOTOGRAPHS AND CHARLOTTE BRONTË'S *VILLETTE*

During her summer 1851 trip to London, Charlotte Brontë visited the enormous glass structure of the Crystal Palace on five different occasions. Afterward, she made a distinction between consumption of its spectacular glittering surfaces, and any true understanding of the curiosities it housed. "It is an excessively bustling place;" she wrote, "and, after all, its wonders appeal too exclusively to the eye, and rarely touch the heart or head" (Gaskell 24). Yet on a different visit in that same summer in London, this time to a phrenologist, Brontë found that surfaces *could* provide true understanding of inner essences (all jokes about "touching heads" aside). As critic Nicholas Dames points out, this visit "exhilarated" Brontë through the "potential" it revealed "of seeing so accurately, so completely, and so quickly" into the soul via the surfaces of the head (367). Brontë wrote of her phrenologist's two reports, "I wanted a portrait, and have now got one very much to my mind…. it is a sort of miracle – *like* – *like* – *like* as the very life itself" (qtd in Dames 367). Brontë believes the phrenologist has indeed discovered and reproduced her likeness: that her own visible surfaces, read visually and tactilely, have allowed her expert reader true insight into her interiority and even her identity – her "very life."

In the fall Brontë returned to work on *Villette*, a novel that combines the phenomenology of glass, a Victorian obsession, with attention to an equally quintessential Victorian desire to know others' private inner spaces by their visible surfaces. Its publication in January 1853 elicited disturbed responses from unsettled readers. Harriet Martineau wrote that the “almost intolerably painful” book was “perhaps the strangest, the most astonishing” of Brontë’s novels (Bloom 102-103). Matthew Arnold believed the “writer’s mind” of such a “disagreeable” book must be filled with “nothing but hunger, rebellion, and rage” (Bloom 105). George Eliot found Villette “wonderful” but also admitted that “[t]here is something almost preternatural in its power” (Bloom 105). Modern readers often agree: Ruth Robbins speaks for many when she terms it “a very creepy book” (223). As John Hughes puts it, “*Villette* is an affect before it is an object of criticism” (716).

I suggest that this affect derives from Brontë’s use of glass to expose the flaws in any desire to know another by sight, which is conditioned by personal expectations: Lucy Snowe, her icy protagonist, hides her interiority from other characters and even the reader behind a façade that seems as transparent as glass but that is actually as opaque and reflective as a mirror. What readers can learn of Lucy from her narrative “face” reflects their own experience, which can produce the “creepy” half-realization that the process of deciphering others’ inner lives from their appearance is always open to egocentric errors.

Brontë’s novel thus finds a useful comparison in the glass-obsessed photographs of Lady Clementina Hawarden, active between 1857 and 1864. The bulk of Hawarden’s oeuvre consists of images of her daughters inside their London home, positioned with windows and mirrors whose reflective surfaces suggests metaphors of mental reflection. The women’s pensive, enigmatic visages irresistibly invite speculation on their private interiority, yet frustrate attempts at interpretation through consistent denial of Victorian narrative. The surfaces of their faces offer the apparent depth and the flat impenetrability of a mirror, reflecting less the women's own thoughts than the preoccupations of the viewer who attempts interpretation. The result, as critical response shows, is a sense of "creepy" transfixion.[76] Critics often describe their interactions with these photographs in terms of being personally struck, even hypnotized. Carol Shires notes the photographs' "luminous intensity" (73). Jennifer Ramirez, author of a dissertation on Hawarden, is "entranced" (1). Carol Mavor writes, "Clementina Hawarden's photographs have always been erotic to me; they make my finger-words write desire" (xxiv). Marina Warner calls the archive of Hawarden's photographs at the Victoria and Albert Museum "an enigmatic, closed treasure… the images swam into my eyes, as they do for all their beholders, with the intensity of a hypnagogic dream" (6). Gillian Rose describes it thus: "To me the images are compelling, demanding. They ensnare my look because they always make me wonder what it is they're showing me, exactly" (103).

This noted power of both novel and photographs to arrest, transfix, and disturb their audiences, I suggest, derives from demands they make on viewers' "Theory of Mind" or "mindreading" ability. The term for that faculty by which humans read others' perspectives, thoughts, and emotions, to "mindread" in this sense is to interpret behavior and appearance as evidence of inner states. Recent psychological studies propose a "two-system" model for mindreading. The lower-level system carries us through most of our daily interactions so smoothly that we are unaware we are using it; we shift into the higher-level system only when confronted with situations in which reading others poses an unusual problem. I propose that Hawarden's and Brontë's enigmatic subjects provoke this higher-level system. As I will explain, this higher-level system is also more prone to egocentric error, which derives in part from its use of *counterfactual*, or hypothetical, models for the other's mental state. These models begin as models of the interpreter's inner state, which the interpreter then adjusts (or fails to adjust) with knowledge of the other.Hawarden and Brontë suggest counterfactuals for their subjects' inner lives, but in key ways refuse to reveal enough information about the implied actual version. The counterfactuals, realized in image and in concrete descriptive language respectively, are more vividly present and memorable to audiences who can encode them using both the verbal and the nonverbal systems. But these counterfactuals seem to point away from themselves to an actual that is actually missing. It its absence, audiences find themselves: their own perceptual and imaginative processes busy with the work of interpretation.

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[76] Hawarden won awards for her brilliant technical prowess in her own day, but then lapsed into obscurity after her early death, so considerably more modern than contemporary critical response exists.

This chapter, then, explores exceptions to the dissertation's focus on vision and curiosity as both lead to sympathy: it analyzes art objects that do disrupt empathetic audience response with deflection of visual information. Glass as these artists use it, in mirror, window, camera, and narrative phenomenology, reveals the possibilities for mistake inherent in the desire to know the interior via sight of the exterior. In the very place where an audience might reasonably expect a glimpse of another's inner world, Hawarden and Brontë show the audience in reflection, instead, as if art that seemed to offer a window into someone else's private spaces turned without warning into a mirror. The potent response this evasion can produce suggests the "rule" it breaks, that vision offers one important avenue for information about others in daily life and in fiction.

Victorian glass culture

Glass structured the physical and phenomenological world of the mid-nineteenth century to an unprecedented degree. England had possessed Venetian glass-blowing technology since the end of the sixteenth century, but achieving flat glass for windows and mirrors from this traditional method was a difficult, expensive process (Pendergrast 155). Robert Lucas Chance introduced technology for blowing sheet glass in the 1830s, allowing English factories to produce sheets in mass quantities and previously unimaginable sizes. Parliament abolished the Excise tax on glass in 1845 and the Window Tax in 1851, causing the price of glass to plummet between 1845 and 1865 (I. Armstrong 43). The combined result of a "huge increase in production, new methods of working, and falling prices" meant that over these years glass quickly evolved from a luxury item to a ubiquitous one (I. Armstrong 1). Newly glazed shop windows "radically transfigured the experience of walking through commercial sections of London, fashioning the streets into gas-lit spaces" of glittering display (Miller 1). For the first time pedestrians could watch their own moving images reflected in the cityscape. Domestic glass also increased as box sash windows proliferated in Victorian architecture (I. Armstrong 96). The height of what Isobel Armstrong calls "glass culture" is probably the Crystal Palace, wherein the glass reproduction of the Hope Diamond was considered to outshine the real thing, housed one floor down (2, 134).

Glass' new accessibility meant that Victorian tools and toys changed as well as the physical environment. Better glass meant better lenses for microscopes and telescopes, while cheaper glass encouraged "window games" including the stereoscope and the stereopticon or magic lantern (Joseph 71). Glass facilitated the development of the photographic camera via the glass plate and wet collodion process. Mirrors appeared everywhere in middle class interior design books and homes; for the average Briton it was a new experience to see the whole body reflected in a cheval glass (I. Armstrong 96).

Victorian culture responded with its own glass preoccupation. Windows and mirrors as "perceptual apertures" and metaphorical views appear everywhere in Victorian art and literature (Joseph 70). Lewis Carroll's *Through the Looking-Glass, and What Alice Found There* of 1871 is only the most famous example from a list of glass-, window- and/or mirror-obsessed novels from this period that includes *Wuthering Heights*, *Bleak House, Middlemarch*, and as I will show, *Villette*.[77] Robert Browning, Alfred Tennyson, Dante Rossetti, and Matthew Arnold all wrote poetry utilizing windows, mirrors or window-like apertures.[78] Isobel Armstrong has noted the Victorian popularity of the Cinderella story, with its central glass slipper and frequent illustrations of lavish chandeliers (204-215). In the world of painting, the Pre-Raphaelites frequently depicted scenes with mirrors or windows: for instance John Everett Millais' *Mariana* deploys a window as a seemingly metaphorical representation of the psychological state of Tennyson's protagonist, Edward Burne-Jones' *The Mirror of Venus* turns a natural pool into a mirror, and William Holman Hunt's *The Awakening Conscience* juxtaposes both mirror and reflected window. James McNeill Whistler's famous *Symphony in White No. 2: The Little White Girl* uses a mirror to show his model Joanna Heffernan's face.

This cultural and artistic preoccupation with mirrors suggests both the creative affordances of glassed surfaces, which reflect light and double images, and also a crucial Victorian concern with how to read *people's* surfaces. Gerhard Joseph argues that

> The pervasive recourse to framed transparent or reflecting surfaces in the narrative situations of Victorian [art and literature] would seem to tell us

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[77] In *Bleak House*, Lady Dedlock's repeated views of domestic scenes through windows help lead to her breakdown. *Middlemarch* includes a famous mirror metaphor; repeated gazing through her boudoir window catalyze Dorothea Brooke's epiphany.

[78] See respectively "Pippa Passes" or "Andrea Del Sarto," "The Lady of Shalott," several sonnets from *The House of Life*, and "Dover Beach" or "Lines Written in Kensington Gardens," just to name a few.

> something about how that period as a whole "saw" the world. (70-71)

That "something," I suggest, is the necessarily incomplete, mediated interpretive process involved in reading others via their appearances – a process that always begins with the self. If consciousness is awareness of the self in the act of perception, then reflective glass surfaces can perhaps be particularly conducive. Isobel Armstrong suggests of windows that "Because [a window] insists on the self and what is outside the self… the window is always about a double experience of self and beholder" (131). Mirrors produce a doubly-charged version of this experience, in which self and beholder are one: seeing oneself in reflection can prompt both consciousness of the self and unusual awareness of one's own external, visible appearance. Glass as it appeared in windows and mirrors at mid-century was thus not just the ubiquitous raw material for new and improved products, but also the means for an encounter. Capable of functioning as both medium and barrier, sometimes simultaneously, glass provoked Victorian consciousness that perception is not unmediated, and that surfaces conceal as well as reveal. No wonder, then, that Victorian cultural narratives of interpersonal interpretation draw on glass.

Early Hawarden and Glass Culture

If glass can specifically contrast inner realities and outer appearances, then Lady Hawarden's photographs are perfect exemplars of Victorian glass culture. Hawarden left behind very little biographical material that might help her modern interpreters understand her artistic intent – she kept no journal and never wrote about her photographs – but from her earliest work, her images show a playful knowingness about surface appearances and inner truths, about seeing and being seen.[79] Hawarden probably began her photographic career in 1857, shortly after her family moved to Dundrum, an estate in Ireland; most of her early photographs are records of Dundrum, including its landscapes and workers, or family portraits, some of which are staged in fancy dress. Hawarden's fancy dress portraits situate her in an ongoing British art tradition that includes Joshua Reynolds' fancy-portrait paintings of aristocrats dressed as shepherdesses, Roger Fenton's photographs of friends masquerading as Arabs, or Julia Margaret Cameron's images of family and servants posing as figures from myth and literature. But unlike these images, Hawarden's early fancy dress portraits taken outside at Dundrum seem to finesse the inherent play-acting of this tradition quite overtly. In these photographs (for example, see Figure 2), she has dressed her husband as an Irish fiddler and her barefoot daughters in peasant garb, and posed them within a photographic booth. But she frames the composition so that the sides and edges of the booth appear. Given Hawarden's skillful composition on display in other framed early scenes, of figures in doorways, of windows in farm buildings, and of the interior of a railway depot, it is difficult to imagine that she intended to trim the fancy dress photographs manually. The environment obvious beyond the booth's boundaries suggests that the photographer wants to call attention to the constructed, playful nature of these images, behind which the reality of a wealthy family with leisure, beauty, and talent to spare shimmers like a hologram.

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[79] She seems to have taken up photography about 1857, when she was in her mid-thirties. Born in 1822, she spent her childhood pursuing female "accomplishments," which would have included the arts. She married

Figure 2: Clementina Hawarden, PH.457:166-1968. c. 1859-1861. Victoria and Albert Museum, London.

Image removed for copyright reasons

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the Honorable Cornwallis Maude, the future Viscount Hawarden, in 1845. Although his parents initially opposed the match, perhaps because Clementina brought comparatively little fortune, the marriage was by all accounts a happy one. Clementina bore her husband ten children; seven daughters and one son lived to adulthood. The couple lived in London until her husband inherited the viscountcy and Dundrum, the family estate in Ireland (Dodier 14-21).

Similarly, Hawarden’s early work shows a fascination with reflective surfaces hiding depths (see fig. 3 and 4). The vast majority of her early landscape photographs taken at Dundrum in Ireland include water in some form, whether the Multeen River or a flooded quarry nearby. In many of these, the reflection on the surface of the quiet water forms a central component of the composition, often repeating the actual view of bare-branched trees above or exploring the visual possibilities of ice reflecting light. The water’s flat reflective surface holds its own dark depths in tension with the heights of mirrored sky above. In this obsession with reflection and in her play with surface appearances, Hawarden’s early photographs prefigure her later interest in windows and mirrors in the photographs she took of her older daughters inside, on the second floor of their South Kensington home.

When Hawarden’s family moved back to London in 1859, she began to focus her efforts largely on photographing her daughters and other family members indoors or on the balcony and terrace of their home in South Kensington (Dodier 21-41). It is mostly these domestic scenes, taken between 1859 and 1864, which have begun to attract recent “avid [critical] attention” (Shires 73). These images often employ mirrors or window glass to reflect and repeat female images, continuing Hawarden’s participation in glass culture. The images seem to offer depths of narrative import, inviting viewers to speculate on their subject’s mental cogitation as suggested in visual metaphors of reflection. Yet they remain enigmatic, flat surfaces.

Figure 3: Clementina Hawarden, PH.457:115-1968. c. 1857-1860. Victoria and Albert Museum, London.

Image removed for copyright reasons

Figure 4: Clementina Hawarden, PH.457:37-1968. c. 1857-1860. Victoria and Albert Museum, London.

Image removed for copyright reasons

For example, consider Hawarden's photograph (Figure 5) of Clementina seated before a cheval glass, gazing in a kind of reverie at her own image in the mirror, which also reflects high-rise buildings through the window in the background. Without labeling information or a title, this image shows a woman in a private moment, perhaps representing simply an accident of space or perhaps fraught with psychological drama. The woman's pensive face in reflection suggests her mental reflection on private thoughts. Her bare arms and disarray, and her apparent unselfconsciousness, suggest intimacy. But without the heavy-handed clues and symbolism of Victorian narrative art, the viewer is left to interpret formal elements and body language: the woman's body turned towards the mirror, her shaded facial expression in reflection with perhaps the ghost of a smile, her cheek resting on her hand, the shirt falling over one shoulder, the lines of light and shadow crossing her skirt and reflected in the mirror.

Virginia Dodier notes that the "lady-and-looking-glass motif… became something of a cliché in portrait photography in the 1850s and 1860s," perhaps in part because a mirror reflecting light can brighten areas that would otherwise be shadowed (48-50). But they appeared in paintings, too, where the artist was presumably less reliant on momentary lighting conditions. James Abbott McNeill Whistler's *The Little White Girl: Symphony in White, No. II* is perhaps the most famous painting from the period that foregrounds a woman's reflected countenance; in fact at least one critic has suggested that Hawarden's photographs, remarkably similar in other respects as well, may have

Figure 5: Clementina Hawarden, PH.457:177-1968. c. 1861-1862. Victoria and Albert Museum, London.

Image removed for copyright reasons

influenced this painting (Haworth-Booth 113).[80] Mirrors and windows as props may have become artistic cliché during the period, but that also suggests the cultural interest in glass. Beyond technical considerations, mirrors were a newly ubiquitous glass household item that, like photographic cameras themselves, vexed the relationship between surface and interior, between the felt subjective and the apparent objective.

Photography both promised to capture unmediated views, and also opened up new perspectives, making visible what had been invisible to the unaided eye. The English co-inventor of photography, William Fox Talbot, called his invention "the picture which makes *itself,"* a phrase that was picked up in newspaper announcements.[81] On the one hand, then, photography seemed a purely mechanical process for capturing views – or for views to capture themselves, as clearly and directly as in a mirror – without human interference. Its apparatus of box and glass and window (aperture) seemed so mechanical that many even doubted whether photography could count as *art*.

On the other hand, however, photography made subjectivity and the vagaries of perspective newly visible. As Nancy Armstrong points out, photographic technology exposed radically new views of what had seemed familiar: "the panoramic lens and rapid exposure allowed the camera to focus on certain details" that were not immediately apparent to the naked eye, and yet "immediately came to be seen as so many properties of its subject matter" (14-15). Photography captured and displayed what was not always immediately visibly apparent, under the banner of empirical objectivity, which could not help but produce an unsettling sensation of multiplying perspectives. Furthermore, photographic images of "scientific phenomena" like clouds or lightning changed both public understanding of and even artistic convention for representing nature (Tucker 130-155). Victorian debates over whether scientific texts should include drawings or photographs as illustrations demonstrate the medium's shifting status.[82]

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[80] Other well-known glass culture works that seem highly influenced by Hawarden's compositions include Hunt's *The Awakening Conscience* and Lewis Carrolls' photographs of figures (including Ellen Terry and the Millais family) in or through windows. See Dodier.

[81] *The Corsair* echoed Talbot's words thus:

> All nature shall paint herself—fields, rivers, trees, houses, plains, mountains, cities, shall all paint themselves at a bidding…. Here is a revolution in art…. Talk no more of 'holding the mirror up to nature'—she will hold it up to herself, and present you with a copy of her countenance for a penny. What would you say to looking in a mirror and having the image fastened!! ("Pencil of Nature")

As a medium and as an apparatus of glass and reflection, then, photography was doubly suited to glass culture as it influenced art. By the time Hawarden was working, amateur photographers such as she had begun to explore the artistic uses of photography even though the medium remained contested.[83] Hawarden's practice of exhibiting her pieces with the conventional artistic titles "Photographic Studies" or "Studies from Life" suggests her conscious artistic intention (Dodier 21-22). Her later work in domestic spaces with mirrors and windows fits squarely within this context, which she uses to unsettling effect. Where her early work suggests her play with surface appearances, so her later work challenges artistic convention by provoking awareness of tension between surfaces and depths or interiors in the context of glass culture.

For example, one image (Figure 6) shows Hawarden's eldest daughter Clementina seated before an open window, looking down at a book. The open window behind the young woman

Figure 6: Clementina Hawarden, PH.457:288-1968. 1861. Victoria and Albert Museum, London.

Image removed for copyright reasons

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[82] For example Jennifer Tucker ably points out that a vocal contingent of mid-Victorian researchers and medical practitioners during this period of transition still preferred "the skilled eye of the observer" to the "mechanical objectivity" of the photographic lens (177).

[83] This was also the period when photography was becoming available to a wider range of social classes; active photographers would soon include amateurs recording their lives without artistic intention and professionals working for public consumption, as well as amateur artists like Hawarden (Seiberling and Bloore 106).

echoes the one next to her. A large camera lens lies on the floor behind Clementina, placed carefully in front of the second window in much the same relative position as Clementina in front of the first window. The photograph suggests duplication of eyes: doubled windows, camera lens and camera lens, and camera lens as window. The latter comparison also positions the book as a metaphorical window for the imagination. Yet Clementina's thoughts, like her reading, remain opaque. In another image Clementina stands in the open sash window as if arrested as she stepped in from the balcony. She leans her head on the window frame, her face pensive with private reverie. Her liminal position between outside and inside the room suggests an equal tension between her inviolate inner thoughts and the intimacy of her appearance, with skirts gathered and shirt slipping over her shoulder.

In these later works, Hawarden's images continue to offer tantalizing surfaces. They differ strikingly from her contemporary fine art photographers in her refusal to supply a narrative: her works participate in Victorian narrative convention just far enough to promise depths of meaning, yet they refuse interpretation. Much popular Victorian art suggested a story with heavy-handed references to tales familiar from literature or history, or offered an over-abundance of clues that a viewer could use to "read" the painting not unlike a novel. Such clues included physical details such as clothing, setting, or symbolic objects, and also the physiognomy of figures, whose faces were believed to reveal habitual traits. Viewers reading these images became active participants in creating meaning (Thomas 15, 30). Following in the tradition of painting, Julia Margaret Cameron's, Oscar Rejlander's, and Henry Peach Robinson's (sometimes composite) photographs of highly staged scenes demonstrate that Victorian art photographers eagerly participated in this narrative tradition.[84] In sharp contrast, "Hawarden shatters nineteenth-century expectations for story and works against a reduction of the image to language" (Shires 75). Hawarden does not often provide clues prompting a viewer to read in a narrative; where she does use props they are swept free of easy significance. Her photographs of her daughters perusing letters or gazing solemnly through windows are not contextualized with other details suggesting anecdotes of lost love or sudden news. Unlike Cameron's or Reynolds' images, even her costume tableaux lack allusive titles to explain their precise identity or significance. And while her daughters' expressive faces convey emotion with clarity, their countenances suggest secret reverie as often as any specific personality trait or feeling.

Dodier suggests that Hawarden's images participate in a different tradition, that of the Victorian "subject picture" – or what Dodier has argued might "more rightly be called 'subjectless' because… they have no real subjects beyond the beauty of women and the comforts of home" (44). This sort of art, derived from Dutch and Flemish genre painting, often presented women in domestic settings to celebrate idealized femininity. Similarly, Hawarden's images anticipate the work of Whistler and the Aesthetic movement in a fondness for beautiful women and refusal of explicit narrative meaning. Aestheticism moved painting towards decorative art, away from its long tradition of intellectual stimulation; confusing or emptied clues in Aesthetic painting "block[ed] the longstanding habit of interpreting visual forms for their underlying meanings [and] force[d] the viewer to fall back on sheer contemplation" (Prettejohn 76, 67). Meanwhile Victorian photographers, like their predecessors in genre painting, continued to place beautiful girls and women in windows as objects of aesthetic interest.

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[84] Rejlander may have pioneered the composite photograph, which uses multiple negatives to create one printed image. One of Robinson's most famous images is "Fading Away," in which five negatives construct a sentimental deathbed scene. For more on Robinson, see Ellen Handy et al's *Pictorial Effect Naturalistic Vision* or Margaret F. Harker's *Master of Photographic Art*.

Hawarden's images are certainly beautiful, but their enigmatic subjects ask viewers to question their surfaces: they do not let the viewer rest in contemplation of "meaningless" beauty. Her photographs' hints of secret inner worlds distance these women's feminine beauty from the figures in subject pictures, whose faces suggest blank surfaces available for inscription in any preferred domestic ideology. These images irresistibly invite interpretation beyond an appreciation of composition and light or of women's domestic beauty, and yet consistently foil attempts to pin down precise meaning via titles or other narrative clues. An image (Figure 7) like the one of Clementina reclining in rest, eyes closed, is littered with objects that seem to *mean* – the mirror, the window, the vase, the plate, the small purse whose handle she holds – and yet add up to nothing coherent. Clementina's own physiognomy, seen directly and in reflection, seems to offer potentially better clues within a Victorian system of narrative interpretation. Yet they too turn the viewer inward on her own thought processes, provoking awareness of the viewer's own reflection within whatever interpretation she creates.

Figure 7: Clementina Hawarden, PH.309-1947. c. 1863-1864. Victoria and Albert Museum, London.

Image removed for copyright reasons

Physiognomy: Surface and Interior

A desire to read surfaces as evidence of inner realities seems to have driven the Victorian popularity of physiognomy, a system that promised practitioners knowledge of other people's characters through their appearance. Though the practice of physiognomy is at least as old as the ancient Greeks, most Victorian Britons encountered it through the influence of Johann Kaspar Lavater's 1772 book. Published first in German, but translated into English, Lavater's work enjoyed immense popularity in the nineteenth century, when cheap editions became common. His work regularized a typical human tendency to judge others by appearances into a system that, like natural history and other disciplines of taxonomy, provided a classificatory framework for knowledge (Pearl 16). In fact Lavater borrowed habits of comparison based on visual features from the natural history of his day, writing, "Precision in observation is the very soul of physiognomy" (qtd in Wheeler 431). His work uses "hundreds of examples" to show "how to use the shape and placement of facial features to interpret faces," and how to "describe an individual's whole form and each particular feature, beginning, as natural historians do, with stature and proportion of limbs" (Wheeler 430). Readers who studied his techniques and compared his examples could, like natural historians learning to identify species in the field, learn to discern the characters of those they met on the street.

Some natural historians tried to distance themselves from Lavater's unscientific system, which of course relied not on intrinsic relationships between form and character but on cultural norms and associations.[85] But such effort itself indicates the degree to which physiognomic principles were part of popular and even intellectual culture. As Sharrona Pearl points out, physiognomy became not just a system but a cultural discourse whose participants needed little more than familiarity with the basic idea. Even those who had never laid eyes on a page of Lavater's book had eyes to see their neighbors, and could easily absorb the interpretive framework from novels, visual art, the theatre, wax museums, and advertisements. As a "loosely codified, infinitely flexible system," physiognomy for "most Victorians… was a fact of life in all relational and representational contexts; from faces in the street to drawings on the page, physiognomy was the quickest and most immediate way of understanding who people were" (Pearl 8).

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[85] Charles Darwin went to great lengths to distinguish his work on emotional expression from general physiognomic principles. See for instance Jonathan Smith's two chapters titled "Darwin's Faces" in *Charles Darwin and Victorian Visual Culture*.

Physiognomy thus offered comfort to Victorian anxiety about *knowing* others in the absence of traditional social bonds and long familiar communities. As Walter Houghton puts it, "In one sense democratic-industrial society was not a society at all," at least in the felt judgment of a culture only recently emerged from "a Christian-feudal organism where everyone has his recognized place and function" (77). In the "huge, impersonal city", "simply a 'place' where a mass of unassorted atoms is collected together for greater business efficiency," familiar neighbors and a sense of community could seem things of the past (Houghton 79). Though the Victorian middle class attempted to carve out suburban spaces, away from the lower classes and therefore supposedly safer, no part of the city was truly free from "outsiders" (Whelan 40-59). Victorians sought reassurance, then, in the idea that the dangerous and the untrustworthy could be identified by their immediately visible surfaces. If visual appearance indexed interiority, then upstanding and socially acceptable Victorians could identify each other, as well as pretenders and the untrustworthy (Pearl 15).

Mindreading in Today's Psychology

Victorian physiognomy, like its cultural precursors, was predicated on culturally privileged aesthetic norms rather than actual connections between character and appearance. Yet modern cognitive psychology has returned to a version of the idea that appearance indexes inner states – not of character but of thoughts and emotions. Some cognitive psychologists today study how fleeting expressions, posture, body language, behavior, and similarly visible (as well as audible) cues, rather than skin color or facial shape, communicate without language how others think and feel.

As I have mentioned, "Theory of Mind" is the cognitive science term for this ability to infer thoughts, beliefs, desires, and feelings from appearance and behavioral cues. Researchers who assert that we do not experience this capacity as a conscious, comprehensive *theory* about our own or other people's minds suggest "mindreading" as a better term (Apperly 3). We use this ability when we interpret our own proprioception, emotion, mental imagery, and internal dialogue as our conscious thought processes. Likewise, we use it when we read meaning – inferring feelings, thoughts, plans, and intentions – into other people's appearance, actions, and words, even though these are limited and indirect indicators by comparison (Carruthers 2-3). As Zunshine and psychologist Keith Oatley point out, mindreading is also the function we use to flesh out limited cues about characters in a novel, a visual image, or a movie into more or less fully realized people with their own internal experiences including memories, thoughts, feelings, desires, and plans for the future (Oatley 18-20, Zunshine 6).[86]

Though this much is consensus, cognitive psychologists disagree about how exactly such mindreading works. The "theory-theory" of mindreading is the idea that children gradually develop concepts for mental states like beliefs; after a certain stage of development, humans can reason via a kind of "folk psychology" about other people's inner lives using these concepts. By contrast, adherents of "simulation theory" assert that we understand others not through intellectual processes of reasoning about how minds work, but by putting ourselves in their positions and using our own emotional responses to understand theirs (Apperly 5). An emerging group of cognitive psychologists suggest that both models are incomplete, and pose a third, two-systems model that moves away from the two older models, both of which are grounded in philosophy of mind and therefore depend on more or less conscious inferences. It is this “two-systems” model that I use to analyze Hawarden.

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[86] Ian Apperly also notes that this process of inference occurs in both mindreading and in reading (whether fiction or nonfiction): "When we read text we not only process the words in front of us but also make elaborated inferences about the meaning behind them, which go far beyond what is on the page. When we mindread we often have to process perceptually accessible social stimuli, and we always have to make significant further inferences to arrive at the underlying thoughts, desires, knowledge or intentions that we cannot directly perceive" (4).

Adherents of the “two-systems” model note that mindreading, considered as one monolithic system, must function in contradictory ways. At times, it must allow us to make considered judgments, as in Ian Apperly’s example of a jury member deciding a defendant’s guilt or innocence; at other times, it must help us leap to seemingly thought-less determinations in fleeting social encounters. But what any cognitive system gains in speed and efficiency, via settings prepared by nature or experience to respond quickly, it loses in flexibility, which is needed for thoughtful, considered conclusions (Apperly 8-9).

Thus Apperly, Peter Carruthers, and others conclude that mindreading actually depends on two systems. One efficient, “lower-level” system requires less cognitive processing and functions without full awareness. This system does not require conscious inferences, and therefore would not even count as “mindreading” under the older philosophy of mind models. Yet adherents of the “two-systems” model suggest that it nevertheless facilitates much of our effortless daily social interaction. A perceptual system like vision provides a useful analogy for this efficient mindreading system: vision happens not in one centralized location, but across a network of brain modules, each of which is calibrated to respond to a narrowly defined perceptual input, like edges or motion (Apperly 120). Similarly, this lower level mindreading system uses division of labor and inflexible modules responding to strictly defined inputs to process social information efficiently and without the need for inference. The system's inputs are social and behavioral cues; its outputs are responses from the observer.

Apperly explains that this pragmatic system runs on *schemas*, or organized frameworks for knowledge, including social knowledge, and *scripts*, or internalized procedures for repeated interactions with regularized participant roles, such as asking for a table at a restaurant. There is, for instance, little inference required to know that a polite guest thanks a waiter for receiving a glass of water. Similarly, it may be that conversation between members of the same culture does not always require the work of inference; rather, conversationalists each use the first explanation of the other's speech that comes to mind, unless plainly ill-fitting (Apperly 115-125).

The second system, by contrast, is slower but allows greater flexibility because its constraints are looser. Processing thus requires more cognitive effort, and produces the sense of the self in thought. This is the system we use in special situations requiring extra attention. It is also the system most like the older models described above as theory theory and simulation theory, in that both of these older models require a greater degree of cognitive processing, and more or less conscious awareness. Where Apperly and likeminded cognitive psychologists differ most is in their assertion that we shift into using the second, high-level system only when we need it, rather than in every mindreading situation. We use it only when we confront a situation that requires more than *just* schemas, scripts, and roles to understand (Apperly 154-5, Carruthers 236-240).[87]

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[87] Schemas, knowledge, and other internalized social and cultural norms are still important to the second higher level system, insofar as they help us determine what information of unlimited possibilities might be

The activity of the higher-level mindreading system feels like thinking because it is thinking; it shares with other forms of reasoning a method for mentally representing information that cognitive psychologists call a "situation model." Such a model includes relevant information extracted from a text, a work of art, a conversation, or a social encounter, represented in the mind and fleshed out with associations from memory. The higher-level mindreading system seems to represent another person's state of mind as a mental model within the larger situation model encompassing the circumstances in which that other person is encountered (whether fictional or in real life). The mental model will be richer or flimsier depending on available cognitive resources and the mindreader's motivation for constructing it (Apperly 126-8). Along the way we feel our*selves* in the process of thinking. As Apperly notes, it is this mindreading system at work when mindreading feels "less like perception and more like reasoning" (Apperly 125). While Apperly's theory incorporates scripts and schemas, I will speak of exemplars to be more consistent with Dual Coding Theory.[88]

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relevant for the work of interpretation. Yet the higher-level system does not merely use schemas, knowledge, and norms as frameworks for identifying and organizing relevant information; it also allows us to create a full model of the thoughts and feelings of someone else, when we wish.

[88] Apperly's explanation is inconsistent with Dual Coding Theory insofar as it relies on schemas, which are generalized concepts based on the abstraction of regular features from repeated situations or encounters. Paivio argues that such abstraction requires too much cognitive work, both to create and to use. A DCT version of Apperly's theory would replace schemas with *exemplars*, which are particular examples of a given situation or encounter, based in single concrete experiences. A "good" exemplar will be the central node in a distribution of related variants, likewise concrete and particular, any and all of which may be activated by a similar encounter. The DCT explanation of the pragmatic lower-level mindreading system, then, would suggest that it activates exemplars without needing to bring them into conscious awareness for extra cognitive processing. Instead, the whole process from perception through interpretation to response is automatic and nearly instantaneous. The higher-level system likewise activates exemplars, but requires a greater degree of conscious awareness for active interpretation. It takes over when automatic associations are not enough for social function – when, in other words, we need to do more work to determine what someone else is thinking or feeling. Mental models are not abstractions, but a kind of "folk psychological" belief about another person's specific mental state, based partly on exemplars from previous experience and partly on concrete details from the current larger situation. I will adopt this DCT version of Apperly's ideas going forward; it is after all consistent with Apperly's own assertion that we do not experience ideas about other people's mental states as abstract theory but as concrete, lived instances.

Cognitive Analysis: Theory of Mind Applied to Hawarden

As I have noted above, the mysterious reveries of the young women appearing in Hawarden's photographs can provoke questions without ever answering through the popular Victorian art narrative. In one such photograph (Figure 8), Hawarden's eldest daughter Clementina reclines in an armchair, her head cradled in the crook of an upraised arm. Her other hand holds her place in an open book. Positioned between the window on the left and the shadow of its bars and lacy curtains on the wall on the right, Clementina closes her eyes as if in sleep or reverie. The photograph invites speculation about her dreams – inspired by her reading? Her window-gazing? – to which it will never respond. Clementina's beauty seems fragile, fine, vulnerable, intimately glimpsed, yet her interior life remains utterly unavailable and unassailable. Gazing at her image can provoke the wish to enter the photograph to rouse her and ask questions, to "enter the paper's depth" as Roland Barthes puts it (Barthes 100) but the apparent glimpse that seems to promise entry remains a flat surface as inviolable as Clementina's own mind.

With no easy answers in the form of title or other narrative clues, which would conform to original viewers' learned cultural expectations for narrative visual art, those viewers who felt themselves interested in the photographed woman's reverie would have to use higher level mindreading processes to infer a mental state from Clementina's physical attributes. (Latter day viewers, who might not comprehend the meaning of Victorian narrative clues without education, are only more prone to this effect.) Because this high-level system is both less frequently used, and also elicits the sensation of the self involved in thinking, using it to build a mental model for Clementina will involve her mindreader in the less frequent and more conscious, effortful work of comprehension. If such conscious work without the chance of confirmation also makes the mindreader-viewer even dimly aware of his or her tendency to import personal biases into not only this, but every higher-level mindreading task, then it is no wonder the photographs maintain such unsettling, yet transfixing, appeal.

This possibility points to another way in which the two systems account elucidates response to Hawarden: the higher-level system is indeed more vulnerable to egocentric errors, or those which stem from an individual's personal experiences, memories, and associations. This vulnerability occurs in three ways. First, exemplars help to determine what information is relevant to higher-level system processing, biasing the results of that process. Along with a mindreader's other associations, memories, and knowledge, they will also help to determine the result of that process – the situation model and its embedded mental model. Thus the higher-level system is doubly vulnerable to the influence of egocentric assumptions, which require conscious work to correct. Secondly, the information that exemplars suggest is relevant is likely to be most accurate for people who share the same culture and society. Change over time unavoidably alters what modern people versus Victorians would find salient. And thirdly, our mental model for another person may begin as a model of our own beliefs and feelings, which we then alter according to what we learn or know about the other.

Figure 8: Clementina Hawarden, PH.457:268-1968. c. 1862-1863. Victoria and Albert Museum, London.

Image removed for copyright reasons

Hawarden's Counterfactuals

Some evidence suggests that higher-level mindreading depends on the human ability to think using counterfactuals, or hypotheticals that describe a not-actual state. A counterfactual usually posits a hypothetical change ("If x were y instead") and then traces its consequences ("then z would result"). Like narrative plotting, counterfactuals offer reasoning strategies that allow thinkers to imagine alternative pasts, presents, or futures for themselves or others. Apperly notes that Shaun Nichols and Stephen Stich base their entire theory of mindreading on counterfactuals, in which mindreaders first "build a hypothetical model that initially inherits all of [their] own beliefs by default" and then "adjust specific beliefs on the basis of what [they] know about the target person" (125-6). In this theory, a mental model is a counterfactual, dependent on what the mindreader would think or feel in the other person's position. The mindreader secondarily adjusts the model to fit what he or she knows about that other.[89] Research shows that mindreaders usually fail to account fully for differences, which means they typically fail to adjust the model enough. Any mental model is thus highly likely to inherit more of the mindreader's own mental content than would be strictly accurate (Apperly 130-132)

In short, the higher-level mindreading system allows us much greater flexibility for navigating novel, complex, or challenging social situations that require deciphering others' mental states. But this open-ended power comes at a cost: because the system requires so much individual input and subjective thought, it is much more susceptible than the lower-level system to egocentric biases. Because the surfaces of Hawarden's photographs tempt this higher-level system, but offer little in the way of material for those who respond to its interpretive call, perhaps they leave viewers with the original counterfactual model, and a haunting awareness that it is inaccurate.

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[89] Apperly adds that Nichols and Stich are unclear about how the mindreader decides what information is relevant for adjustments, but calls the theory "a useful starting point" (125).

For example, return to the photograph (Figure 5) of Clementina in reverie before a cheval glass. The viewer who answers the photograph's appeal to consider its figure's mental state with the higher level mindreading system will draw from personal exemplars and cultural influences to construct a situation model. (Note that while this viewer will likely be aware of thinking, she will not be conscious of this process in these terms.) If the viewer recognizes that the photograph was made in England about 1861 or 1862, then his or her situation model will likely include what the viewer believes about English culture during the Victorian era, about Victorian photography, and/or about women in the Victorian period, among other possibilities. Whatever is most salient in memory will influence the situation model for the photograph, which will in turn help to influence the mental model the viewer constructs for Clementina. If the mental model begins as a personal counterfactual, then influences should include personal experiences and associations related to the situation model and ranging from individual memories to experience with other works of art and literature.[90]

Part of the activity of this higher-level mindreading process can involve conscious "checking" of the nested models against alternative versions (Apperly 130). The mindreader might learn new information, or consciously incorporate previously learned information, that shifts the situation model and/or the mental model within it. For instance, more information about Hawarden's London residence may change or reinforce the situation models I have described above. When the Hawarden family moved to South Kensington in 1859, their house at 5 Princes Gardens had just been built in a wave of construction sweeping the area. Along with new residences, the city was building institutions of various kinds, which would include the South Kensington Museum (later the Victoria and Albert, where Hawarden's photographs are now archived), the Horticultural Gardens, and the buildings housing the 1862 International Exhibition, an echo of the 1851 Great Exhibition. Indeed, the buildings visible in Clementina's mirror are those International Exhibition buildings.

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[90] If, for instance, the viewer is highly familiar with the idea of separate spheres for men and women in the Victorian period, then she might well read the photograph as an image of female confinement. If that modern viewer knows, even unconsciously, that she herself would have found Victorian society confining, our tendency to underestimate difference means she will be likely to attribute such a feeling to Clementina. Perhaps the bars of reflected balustrade and shadow, Clementina's obscure expression, and her pose turned away from the window will then provide additional evidence that Clementina feels frustrated, contained, or only ignorantly accepting of her limited lot. If the viewer associates a woman looking into a mirror with Tennyson's 1842 "Lady of Shalott" then this might also influence a situation model of confinement and separation, and lead her to see Clementina as mournful or sadly pensive. If the viewer knows, as Hawarden's original viewers likely did, that the mirror into which Clementina gazes was called a "psyche," then she might consider the image as a metaphor for introspection, as if Clementina is studying her own soul by gazing on her appearance. In this way each individual's situation model for the photograph will be different, and the personal memories and emotions it elicits will influence the counterfactual mental model for Clementina, which will be rich and full or limited depending on the viewer's motivation and interest.

Lady Hawarden could thus look out of the windows of her house over rising structures symbolizing "the most innovative and progressive aspects" of London's "alliance of science and art" at the time (Dodier 32). They were, furthermore, ones that were open to women, as Hawarden's own participation in nearby exhibitions proves. Knowing this may bring new personal associations to bear on the counterfactual mental model, but the changes will vary. Does it reinforce the idea of Clementina before her mirror as a young woman seeing only by reflection what the men of her city are doing outside her window? Or does the image reinforce the sheer closeness of the buildings representing London's most progressive culture to this young woman's daily experience, and subtly suggest that Clementina has the fortune, born of familiarity, to find her own inner life equally fascinating? The viewer's counterfactual mental model for Clementina will be as rich as the viewer chooses, within this larger situation model, but it will be little aided by clues from Hawarden herself.

Shifting the models may therefore make the viewer aware of two uncomfortable truths: that Clementina's thoughts remain inviolable – there is not even any chance to ask her – and that this process of imagining her inner life depends inevitably on subjective processes, always open to error. Clementina is uncanny, both as familiar as one's own thoughts (which is, after all, where she exists) and as distant and inscrutable as any woman dead for more than a hundred years.

To return, then, to Thrailkill's formula: if we speculate, as the artworks invite us to do, then we find ourselves in reflection.[91] One of the most poignant of Hawarden's images for illustrating this "if-then principle" of her work's affect is a photograph of her daughter standing next to the cheval glass (Figure 9). Clementina's body is turned towards the mirror though she looks forward. With one hand holding the frame of the glass near its midpoint on the right side, and the other near the top, her position suggests that she is displaying the glass for the viewer's attention. Her gaze directly at the camera's (and the viewer's) eye offers a half-inviting, half-daring challenge to step forward and look in the mirror. Should the viewer take the invitation and look into the mirror, she might be physically reminded that insides and outsides are often not exact correlates. Given that viewers are restricted to looking at mirror and woman in a surface that none can enter, the unanswered challenge can remind viewers that whatever they choose to imagine Isabella or her photographer might be thinking reflects their own subjectivity in the act of recognizing itself.

Figure 9: Clementina Hawarden, PH.296-1947. c. 1862-1863. Victoria and Albert Museum, London.

Image removed for copyright reasons

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[91] I refer to Thrailkill's "if-then" formula for how a literary effect "works": if a reader (or viewer) responds in such a way, then certain cognitive processes seem to be at work underlying the effect (47-48).

Hawarden's camera is clearly visible in the mirror, and the blurry smudges around its large eye may be her own hand removing and replacing the lens to take the exposure. This is an unusual exception to Hawarden's usual practice of arranging reflective surfaces to avoid catching her own image or her camera's.[92] The conscious choice to reveal her camera suggests that whatever of Hawarden's own subjectivity viewers seek can be found in her images, even as it simultaneously hints that what they find will also be overlaid with the reflection of their own minds.

The photographs are certainly Hawarden's vision, shaped by her talent and technical skill. But while their flat surfaces may appear to offer a glimpse inside the subjectivity of the photographer, *her* consciousness remains as mysterious as those of the women she presents. Seeing her images and her models means knowing, not their subjectivities, but one's own consciousness in the act of perception of an object that continually reverts from a glimpse to a photograph and back again. Viewers become aware of the usually subtle presence of them*selves* in the act of perceiving this object that periodically alerts them to its status as flat image, and may be led to realize how much self determines perception, even of another's inner life. As her audience viewers experience their own perceptual and imaginative processes as the subject of such works, as if art that seemed to offer a window had turned subtly into a mirror.

Counterfactuals in Action: Modern Critical Response to Hawarden

Hawarden began to attract scholarly attention in the 1970s when general interest in art photography was on the rise, but it wasn't until 1989 that the museum mounted a major exhibition of her work (Dodier 110-111). Dodier published the first biography on

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[92] In fact there is only one possible image of the photographer in her entire oeuvre, and without a title it is only a tentative identification. The woman in question stands holding a photograph in her hand (Dodier 36).

Hawarden in 1999, and critical interest has gradually increased over the last fifteen years.[93] Rather uniquely for modern criticism, however, the response remains small enough to read comprehensively. Critics who have discovered Hawarden almost always attest to her peculiarly powerful affect, yet often attribute it to narratives of Victorian women's confinement to domestic spaces and pursuits.

I suggest that Hawarden's affect cannot be attributed solely to this interpretation, and furthermore that modern critics may have responded to their own counterfactuals for Hawarden's models, even as subtle awareness of these models' flaws persists. First of all, actual biographical data, though poignant, does not fully support the idea of a woman frustrated by her culture's constraints. Hawarden's technique and artistic skill did win notice from her contemporaries, both at the two London exhibitions in which she participated and in the photographic press. The Photographic Society of London awarded her two medals for her work in 1866, though Hawarden herself was sadly absent from her own ceremony, having succumbed to pneumonia in January 1865 at age forty-two, after just one week of illness (Dodier 35). This success, though brief, suggests that Hawarden's artistic efforts met at least some public recognition.

Secondly, I note that the words of the critics themselves suggest the photographs expressive, boundary-pushing power instead of their limitations. Yet the same critics tend to describe the photographs in terms dependent at least in part on personal preoccupations with Victorian domestic containment. Perhaps the most obvious, though not scholarly, example of such a response can be found in Andy Grundberg's 1990 review of the

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[93] Prior to Dodier, Graham Ovenden edited a volume entitled *Clementina, Lady Hawarden* (published in 1974) that provides a very basic introduction. She had first appeared for art historical purposes in 1939, when her granddaughter donated 775 of her photographs to the Victoria and Albert Museum. In the scramble of World War Two the collection of album-less photographs disappeared again. It reappeared in 1952 in the corner of a museum office, and the prints were mounted on cards for preservation.

Museum of Modern Art's show "Lady Hawarden, Victorian Photographer" for the New York Times. His title "Victorian Mother's Daughters: So Pure, So Romantic" is a good indicator of the half-dismissive tone he takes towards the images, which he represents as products of saccharine Victorian womanhood. After asserting that "to modern eyes" these images may seem "incurably insipid" examples of repressed narcissism and cloying sentimentality, Grundberg writes that Hawarden's images offer "a condensed and mysterious simulacrum of her Victorian reality" – except that the Victorian reality Grundberg mentions seems to be largely a matter of his own stereotyping. Yet even Grundberg must note Hawarden's enigmatic, transfixing appeal: "Her world is… so suffused with a melancholy dreaminess, that one yearns to cross its fragile proscenium."

For her mostly-female academic critics, as I have shown, Hawarden's Victorian reality is often that of confined domestic spaces, of motherhood, of particularly *female*, and therefore *limited* experience. Linda Shires notes Hawarden's "ability to speak deeply to women about aspects of femininity and female roles" (74). Though Shires briefly questions "to what extent separate spheres are being binarized in these photographs," her argument similarly restricts them to a largely female sphere in which "Life at home with mother becomes not only a playground but a training ground for the very upper-class world in which Hawarden's daughters were expected to function," presumably as domestic angels (79). Even as Shires notes that Hawarden "illustrates… that our view of figures and the meanings we attach to them can never be monocular, singular, or fixed," the view she proposes has much in common with other critics writing Hawarden into the modern cultural narrative of Victorian femininity (86). Thus for Carol Armstrong, confinement is the condition of Hawarden's photography: "It was… the four walls of her confinement – the limits presented by the… domestic domain of the family and the home – that opened up her extraordinary free play in the shut rooms of self-reflexive photography" (114). For Mavor, Hawarden's work is "girl play with a camera," a phrase that suggests the subversive but here also means limits imposed by self-obsession (46).

Perhaps variants of this interpretation have appeared so often not just because it is possible, but also and especially because this vision of Victorian culture is a salient one now. Hawarden's recent critical history demonstrates the power of her art to provoke higher-level mindreading processes, which produce powerful counterfactual mental models without much aid for adjustment, casting interpreters back on their own knowledge and preoccupations. This reflection of self may explain why it is unusually easy for critics to read their own interests into Hawarden's photographs, most notoriously when Mavor apostrophizes the images and then answers for them in the absolute ("Clementina, did you feel flirtatious when you stood up in a corner of the drawing room at another window…? Clementina's lips will never part to answer me. But her off-the-shoulder blouse… murmurs yes: it flirts" (7) or fantasizes at length about "a mother who could have, who would have, indulged in [Mavor's own] adolescent beauty" (16). We certainly can see, as Mavor notes, eroticism and mother-daughter collaboration in these photographs. But that is not all we can see. Mavor's habit of assigning ahistorical, personal titles to these images further imbricates them in her own subjectivity, potentially disserving new viewers who see them first through Mavor's lens rather than Hawarden's (Shires 76). Any limited exclusion from this effect that I can claim derives from my purpose in attempting to describe how the process of interpretation *works* when viewers find themselves drawn into these hypnotic photographs.[94]

Brontë and Glass Culture

The unsettling effect of counterfactuals is increased in *Villette*, where readers dual code vivid, visually descriptive narrative counterfactuals that also hint at Lucy's mental state. Lucy uses *narrative* counterfactuals to hint at her interiority, but withholds information that would clarify her meaning, so that readers have deceptively little narrative input to help them adjust their own counterfactual mental models for Lucy. The face Lucy shows her reader, in this novel of deceptively lucid surfaces, is one she carefully controls to reveal little while seeming to reveal much.

Isobel Armstrong reads *Villette* as a primary novel of glass culture, noting its pervasive and "acute awareness of a reflective world" (96).[95] Within this glass world, the surfaces of physiognomies point only indirectly to inner states. For instance, Lucy's "countenance" is her only recommendation or "reference" as governess to Madame Beck, the icy ruler of a girls' pensionnat, and the older woman engages her even though the "reading" brings mixed results (Brontë 73-4). Lucy's refusal to show her true face to others extends to self-recognition of her own outer appearance: she repeatedly feels "jar[red] with discord" on seeing her image in a mirror (Brontë 234). For Lucy, seeing herself “as others see” her is like seeing a stranger, so little does her outer reflection seem to her to correspond to her inner life (Brontë 234).[96]

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[94] If a viewer does not feel called to question and consider, then this process will not follow. If she does, then to a unique degree among art objects, what she finds is herself reflected.

[95] Windows and mirrors provide avenues for knowledge and spaces for encounter throughout the novel. Madame Beck rules her pensionnat with an all-seeing eye rather than a visible fist, and her constant silent, unobserved observation extends to watching the grounds of the school's garden through her window via a surreptitiously placed mirror. Wayward student Genevra's lover materially defies this surveillance, again by using a window, through which he drops letters for the girl into the garden. Crossed glances in mirrors occasion revelations of the inner thoughts of others, as when Dr. John Bretton discovers Lucy observing him closely in reflection and asks what "defect" she has discovered (Brontë 108). Similarly Lucy glimpses a weakness that Madame Beck would have preferred to hide when she sees the older woman shudder and pluck a gray hair while looking on her face in a mirror (Brontë 115).

By contrast, M. Paul reads Lucy more accurately, describing her inner state to her with precision: “you seem sad, submissive, dreamy, but you are not those things; I will describe you: Savage! Your soul is on fire, lightning in your eyes…” (Brontë 352 translation). M. Paul’s talent for piercing through appearances to discern inner truths seems to result from his use of intuition to read what he sees, as much as from his uncanny ability to watch everyone; it is this sometimes-ruthless combination that allows him to “gaz[e] deep through the pupil and the irids into the brain, into the heart” of the human under his surveillance (Brontë 389).

Lucy’s own phenomenology is of a glass world, where she is separated from most. Brontë repeatedly uses metaphors that seem drawn from bodily experience with glass to describe Lucy’s relations with others. For example, Lucy writes of her thwarted love for Dr. John Bretton that “An invisible, but a cold something, very slight, very transparent, but very chill: a sort of screen of ice had hitherto, all through our two lives, glazed the medium through which we exchanged intercourse” (Brontë 214). This is in contrast with Bretton's own feeling for his eventual wife, which as Lucy watches creates "a kind of gossamer happiness hanging in the air" between the lovers; their growing love builds a sheer, delicate screen that might be clouded or "disturb[ed] by drawing too deep a breath" (Brontë 333). Feeling communicates between others, but for Lucy, whose loves are always checked, it creates a barrier instead – one she can see through but not cross.

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[96] Eyes in particular offer a powerful communicative window in the context of physiognomies. Dr. John seems to possess special knowledge of others because he diagnoses their visages with his professional eye, for instance discerning merely from watching her gaze that Genevra has had a sexual liaison (Brontë 250). Later, he detects that Lucy has seen the mysterious figure of the nun, who appears in the pensionnat’s garden, merely from looking at the teacher’s eyes: “her figure crossing your eyes leaves on them a peculiar gleam and expression not to be mistaken,” he asserts to Lucy, as if he can see the reflection of the nun’s shape persisting on Lucy’s corneas (Brontë 285). Yet willful obstruction and poor reading can block eyes’ communicative power, as when Lucy attempts to apologize to Dr. John for an uncharacteristic outburst, and is repeatedly “baffled” because “Again and again [his] eye just met mine; but, having nothing to say, it withdrew” (Brontë 213). Lucy and Madame Beck silently agree to maintain mutual disguises, with Lucy pretending she does not realize the older woman has inspected her private things; otherwise “*I* should have looked into her eyes, and *she* into mine – we should have known that we could work together no more, and parted in this life forever” (Brontë 131). Dr. John also ignores Lucy’s true feeling for him: as Lucy writes, “He did not at all guess what I felt: he did not read my eyes, or face, or gestures; though, I doubt not, all spoke” (Brontë 352). Similarly, Madame Beck misreads both Lucy and M. Paul perhaps because her own masterful eye is nevertheless cold and emotionless: “her peaceful yet watchful eye [never knew] the fire which is kindled in the heart or the softness which flows thence” (Brontë 79).

In fact, Lucy does seem to be separated by a "sort of screen of ice" or pane of glass from almost everyone – an apparently-transparent but absolute barrier that makes itself felt in her controlled refusal to show her inner life. This glass-like barrier is connected with the novel's close attention to tension between surfaces and depths, for the face Lucy shows to other characters hides as much as it reveals. If she can see through this barrier, she can also hide her face behind it. Because Dr. John "never remembered that I had eyes in my head; much less a brain behind them," Lucy tells us (Brontë 108), she is able to watch him unobserved, and realizes his identity long before he has any idea that she is the Lucy of his childhood experience. She is almost supernaturally invisible while gliding through the novel's dream-like festival scene, which allows her to spy on Madame Beck and her co-conspirators unseen; although Lucy's subsequent conclusion about M. Paul's affections is misguided, her unseen watching allows her secret knowledge which Madame Beck would have otherwise concealed.

The Reader and the Glass World: Counterfactuals in Narrative and Mental Models

Lucy hides her "face" from her reader as well. Though this narrative of her private life can seem forthcoming – after all, the reader has hundreds of pages of Lucy's thoughts and experiences – her unreliable narration means the reader often finds Lucy's surfaces frustratingly opaque. For instance, Lucy conceals from the reader that she has recognized Dr. John as her childhood friend and godmother's son under another name for nearly a hundred pages. "Graham" is a major character of the first chapters, and "Dr. John" is similarly a major character in the later chapters, but Lucy allows no hint that they are both John Graham Bretton, or that she knows it, until the moment of her choosing. This "deception" persists even as Lucy half-hints at her unstated love for Dr. John. Lucy eventually tells her reader that she "recognized him… several chapters back" in part because his adult physiognomy retains traces of his child's face: "he had his eyes, he had some of his features; to wit, all the excellently-moulded lower half of the face; I found him out soon" (Brontë 195-6). But if faces can reveal identities, Lucy's does not; Dr. John has not recognized her until the moment the reader learns the truth as well.

Similarly, the reader finds the surfaces of Lucy's pages – her narrative "face" – to reflect the reader's rather than Lucy's interiority at key moments that promise to reveal Lucy's most painful inner experience. At several important junctures Lucy employs narrative counterfactuals, or in narrative terms, imagined alternatives to "life trajectories" (Dannenberg 1). The most straightforward example occurs when Lucy recalls how close she came to allowing a kindly Catholic priest to influence her life's course. Isolated during a school holiday, possibly physically ill, and heartsick with loneliness, Lucy confessed to a kindly Catholic priest in part simply to make a human connection. Perceiving her plight, he suggested that her destiny was to become a Catholic nun, and asked her to visit him again the following day. But she did not keep the appointment. After narrating the incident, Lucy imagines a counterfactual version of her life as it might have been had she gone to see the priest again:

> That priest had arms which could influence me; he was naturally kind, with a sentimental French kindness, to whose softness I knew myself not wholly

> impervious…. Had I gone to him, he would have shown me all that was tender, and comforting, and gentle, in the honest popish superstition…. I know not how it would all have ended…. I might just now, instead of writing this heretic narrative, be counting my beads in the cell of a certain Carmelite convent on the Boulevard of Crécy in Villette. (Brontë 180)

This passage imagines a counterfactual life trajectory in which Lucy visits again with the priest, whose kindness and offer of membership within an apparently "comforting" community convinces her that she would be happiest serving God in a nunnery. Lucy presents a hypothetical antecedent (she keeps the appointment with the priest) and its consequent (she ultimately becomes a nun). As I have suggested, such causative relationships in which a prior event is seen to influence a later event represent a typical "cognitive pattern" for narrative that humans use to "comprehend a randomly initiated but causally linked sequence of events in time" (Dannenberg 27). As Dannenberg writes, counterfactuals in the context of fiction borrow this cognitive strategy from daily use and/or adapt it from use in nonfictional narratives like journals, autobiographies, and letters; they "simulate the cognitive processes of an *autobiographical consciousness* by framing the kind of retrospective evaluations that are part of authentic autobiographical reflection" (184, emphasis in original). Because Lucy's counterfactual reproduces a familiar cognitive pattern, it may increase the reader's sense that the collection of words Brontë has assembled are the utterances of a real person, with thoughts and a past.

The fact that Lucy sets up a counterfactual life path at all also helps to weave the story's spell more thoroughly. Lucy asks us to imagine a hypothetical version of her life – one that clearly is not factual – which in turn reinforces the idea that the novel's version of her life events *is* factual. Lucy's narration of alternate possibilities for her life increases the reader's absorption in her tale because it increases the feeling that the life story she provides is a real one. Like real lives, Lucy's life seems to have had multiple possible outcomes at various crucial "turning points;" her choices have led her down one path rather than others, but she can imagine that making different choices would have led to different outcomes. Her counterfactual thus recapitulates normal human cognitive strategies. It also subtly asserts the reality of the life narrative she relates through its contrast with another, non-factual possible life. Both facets of this technique work to immerse the reader more thoroughly in Lucy's tale (Dannenberg 110, 118-119).

The content of this counterfactual narrative is also key. The image it conveys is a powerful one in the context of the novel, which repeatedly foregrounds Lucy's celibate, intensely solitary loneliness. Heavy symbolism revolving around convents appears repeatedly throughout the story, in the pensionnat's original identity as a convent, and in the old tale that a wayward nun from that convent who had fallen in love had been buried alive beneath the tree in the garden, and in the repeated appearance of a ghostly nun to Lucy herself right at moments when she contents with her feelings about her frustrated heart. The figure of a nun literally and metaphorically haunts Lucy, like the persistent return of her own struggling loves. The concrete counterfactual vignette she offers thus should activate both representational logogens but also, importantly, referential imagens powerful in the context of this novel for illustrating Lucy's barely-named and always repressed emotion. Like other concrete language, this counterfactual should be dually coded by both verbal and nonverbal systems, and therefore also be more vivid and memorable than the same idea narrated in more abstract language.

This counterfactual in which Lucy becomes a nun is the most straightforward one she employs as narrator. In an earlier moment, she combines the counterfactual with metaphor in a much more evasive fashion. Lucy seems to explain her life as it continued in an otherwise unnarrated gap between chapters, but actually withholds more than she reveals. Rather than relating her history, she presents a metaphor that is also a counterfactual, but she temporarily withholds the information that it *is* counterfactual:

> Far from saying nay, indeed, I will permit the reader to picture me, for the next eight years, as a bark slumbering through halcyon weather, in a harbour still as glass…. A great many women and girls are supposed to pass their lives something in that fashion; why not I with the rest? Picture me then idle, basking, plump, and happy, stretched on a cushioned deck warmed with constant sunshine, rocked by breezes indolently soft. (Brontë 38)

The opening phrase, "Far from saying nay," alerts the reader that this difficult narrator is suggesting that her readers might prefer to envision a happier life than she has led. This is the more so as the immediately previous sentences imply that Lucy would "contradict" the "conjecture" that her home life was happy, except that to do so would leave her readers less happy (Brontë 38). Yet the image that Lucy asks readers to "picture" is undeniably positive, and she does not fully confirm that it is false until after the reader has already presumably imagined that picture. Thus although the image may be shot through with doubt, its concrete language should also manifest itself (even unconsciously) to readers as a dually coded image, activating both imagens and also other associated logogens with their own related imagens. Because it is a metaphor, the image exists in a kind of "blended conceptual space" that combines inputs: Lucy is a bark and her life is a calm sea (or Lucy is a traveler and her life is a boat on a calm sea). The concrete imagery of the boat in a calm sea is the source for imagining Lucy's life, which then seems memorably "idle" and "happy" – the more memorably so as the immediately preceding concrete language should be processed in both verbal and nonverbal systems.

Immediately after indirectly inviting her readers to visualize these happy images, Lucy destroys them. The pleasant versions, the reader discovers definitively, were indeed a counterfactual metaphor. Should she really have been a little "bark slumbering" or an "idle, basking, plump, and happy" girl resting on deck, she writes, she "must somehow have fallen over-board, or… there must have been wreck at last" (Brontë 38). The metaphor as she continues it is aligned with her actual, not her counterfactual life, and it is as concretely cold and disastrous as the former were warm and calm:

> I too well remember a time – a long time, of cold, of danger, of contention. To this hour when I have the nightmare, it repeats the rush and saltness of briny waves in my throat, and their icy pressure on my lungs…. For many days and nights neither sun nor stars appeared; we cast with our own hands the tackling out of the ship; a heavy tempest lay on us; all hope that we should be saved was taken away. In fine, the ship was lost, the crew perished. (Brontë 38)

The "bark" and the "halcyon weather," the "cushioned deck" and "constant sunshine" and "breezes indolently soft" are replaced with even greater detail in "rush and saltness," "briny waves in my throat," "icy pressure on my lungs," the tackling, the darkness, the "heavy tempest" and the shipwreck. Besides the visual image of shipwreck, Lucy's metaphor incorporates taste and touch and sound as well. As with the positive image, then, the negative image comes to the reader in concrete language that should activate nonverbal imagens across modalities. The immediate contrast with the earlier metaphor, still part of the context in the reader's mind, may increase the sense of disaster.

The series of metaphors takes the form of an upward counterfactual followed by its actual counterpart. An upward counterfactual imagines a "better possible world" than the one actually experienced, and therefore it both articulates and elicits regret (Dannenberg 112). Research shows that people are more likely to use counterfactuals as narrative tools for making sense of experience after a tragedy or a negative outcome to an event (Dannenberg 111). If anything, then, Lucy's use of a counterfactual in explaining this otherwise unnarrated segment of her history should enhance the reader's sense that this is a real story, and increase immersion.

However, the counterfactual is also a metaphor, as is its actual counterpart. Lucy says nothing else about these "troubles" (Brontë 38), and the reader must infer from the metaphors. The concrete imagery of ship and sea is again the source for imagining Lucy's life, but now we realize – again memorably – that it has been a time of storm and wreck, with whatever personal associations the reader brings to those concepts. Lucy does not offer actual details from her experience even as she appears to reveal them. Her only elaboration is a metaphorical abstraction: "In fine, the ship was lost, the crew perished." This phrase should be coded dually, and therefore be vivid and memorable, but it provides only metaphorical rather than actual information. Lucy's emotional pain over her experience is implied through metaphorical hints that allow the reader to construct a counterfactual mental model for her affect. Yet Lucy never elaborates on what this meant for her, either in terms of events or in terms of emotions. The reader's counterfactual mental model has only the reader's own associations to provide it weight and heft.

The Ending: A Counterfactual without an Actual

The most famous counterfactual of the novel is, of course, the ending, which seems to allow readers to choose a positive or a negative outcome even as it also points to the un-narrated negative version. Lucy and M. Paul have avowed their love, and M. Paul has left at Madame Beck's bidding for three years abroad. But he has promised to return to her, and frustrate all Madame Beck's plotting; in the meantime, Lucy works at the little school he has given her and waits for his return, peaceful and happy for the first time.

On the penultimate page, Brontë's tense changes from past to present: "And now the three years are past: M. Emanuel's return is fixed. It is Autumn; he is to be with me ere the mists of November come" (545). The tense change produces the effect of the eternal present, as though Lucy and the reader are frozen in the time of Lucy's waiting, as "The sun passes the equinox; the days shorten, the leaves grow sere; but – he is coming" (Brontë 545). This eternal present focuses on one fateful night of Lucy's waiting, when readers know M. Emanuel is at sea, as outside a storm rages: "it shrieks out long: wander as I may through the house this night, I cannot lull the blast" (Brontë 546). Then the narration becomes past tense again: "That storm roared frenzied for seven days. It did not cease till the Atlantic was strewn with wrecks: it did not lull till the deeps had gorged their full of sustenance" (Brontë 546). A fatal ending seems implied:

> Peace, be still! Oh! a thousand weepers, praying in agony on waiting shores, listened for that voice, but it was not uttered – not uttered till, when the hush came, some could not feel it: till, when the sun returned, his light was nigh to some! (Brontë 546)

But then Lucy speaks in present tense once more:

> Here pause: pause at once. There is enough said. Trouble no quiet, kind heart; leave sunny imaginations hope. Let it be theirs to conceive the delight of joy born again fresh out of great terror, the rapture of rescue from peril, the wondrous reprieve from dread, the fruition of return. Let them picture union and a happy succeeding life. (Brontë 546)

Lucy seems to offer readers the choice of endings, one in which M. Paul returns safely and is reunited with Lucy, and one in which he perishes at sea and she is presumably left alone with her heartache, all the worse, perhaps, for the period of hope that preceded it. The present tense of the "pause" seems to leave the ending always open, as if readers may linger – or are trapped – in the uncertain darkness of Lucy's own waiting.

Yet Lucy's very reticence to name an ending in favor of letting "sunny imaginations hope" heavily implies a negative one. In this case, the ending she narrates, of "rescue from peril" and "union and a happy succeeding life," is counterfactual. This would seem consistent with the tenor of much of the rest of the book, in which Lucy's actual life is emotionally desolate, and it is only in her fantasy that she can ever dare to hope for more fulfilling emotional connections. But Lucy refuses to confirm the counterfactuality of this positive ending, just as she will not narrate its opposite. Thus, as Dannenberg pithily notes, "the text narrates the virtual and only implies the actual" (194).

The result of this peculiar narrative strategy is that the reader must imagine the implied actual ending from vague hints, while the "virtual" or counterfactual ending exists in a more concrete form that is also more accessible and memorable. Lucy's text mostly refers to abstractions like "union" and "happy life" rather than explicitly narrating a return (which itself may reinforce reader suspicion of its counterfactuality). Where her text is concrete she names emotions (joy, terror, dread) rather than people or events. According to DCT, these logogens would activate a less direct path to imagens than named nouns, because comprehending them requires activating associated logogens for concrete nouns, events, and circumstances first. But this is still far more concrete and direct than the implied actual ending, which takes no verbalized form at all.

This counterfactual ending may also suggest to readers' memories the space of happy union that was M. Paul's and Lucy's last night together before he left. It is on this night that the glass walls surrounding Lucy (temporarily?) shatter. She answers M. Paul's proposal in stumbling but heart-felt acquiescence: "In such inadequate language my feelings struggled for expression: they could not get it; speech, brittle and unmalleable, and cold as ice, dissolved or shivered in the effort" (Brontë 537). The shattering of her words also seems to represent the shattering of glass-like barriers between self and other. Her communion is with a man who has *seen* her with real empathy, who has as Lucy says "looked into my face and eyes, and arbitered my destiny" (Brontë 542).

In this novel with more enclosed spaces than a Russian doll, the result is the expansion of a private space once restricted to her own heart, after her other refuges, from Madame Beck's garden to her own little workbox near her bed, have all proved violable. Her last evening with M. Paul and their moonlit walk back to the Rue Fossette from the Faubourg Clotilde becomes a kind of encapsulated memory, a "pleasure consecrated to us two, unshared and unprofaned," as M. Paul describes their secret plans (Brontë 538). Lucy describes their walk lit with "such moonlight as fell on Eden – shining through the shades of the Great Garden, and haply gliding a path glorious, for a step divine – a Presence nameless. Once in their lives some men and women go back to these first fresh days of our great Sire and Mother – taste that grand morning's dew – bathe in its sunrise" (Brontë 541). If Lucy has no power to compel that "Happy hour" of union to "stay one moment!" (Brontë 538) she does at least have the ability to turn repeatedly to re-experience it in memory, where it lives again for reader and narrator as window onto an image of happiness, onto a "garden" as safe and private as it is irrevocably lost. Lucy's inviolable interiority here allows her this small defiance of the inexorable rule of time and space.

Hints that this moment of "union," and its promise of continuance in "happy life," are the counterfactual to which Lucy returns in memory, and permits her "sunny" readers to imagine do appear in her final words. After all, "a thousand weepers, praying in agony" hope in vain for calm seas and are disappointed. Typically, with this image of multiple mourners, Lucy speaks nothing at all of her own actual emotions, but only implies that those she names are counterfactual.

If the more concrete counterfactual is thus much more concretely present than its lurking, ambiguous, implied but never named actual alternative, then the reader's mindreading skill applied to Lucy has little to work on. Readerly response to the counterfactual ending will of course be as personal as each reader's experience and associations, but will also at least be directed by Lucy's text. Readers who seek to comprehend Lucy's actual mental state in response to implied actual events have no such guidance. Their interpretations will be wholly their own, and perhaps open to even greater subjectivity. Though of course the point of the ending is to leave the outcome open and, despite Lucy's claims, perhaps even to unsettle the reader with vaguely implied but unstated disaster, the effect may be increased in readers who begin to suspect (even semi-consciously) that their curiosity about the actual ending can be answered only by recourse to their own resources. The narrative counterfactual seems to reveal through vivid and memorable language, but ultimately points to an actual that does not exist. With it, Lucy asks her reader to imagine her mental state as it seems *not* to have been, and provides very little information about how to adjust it accurately.

Conclusion: Art as Window into Other Interiorities

Lucy, of course, has never existed. Her "deceptions" are not real. That she seems to exist every time a reader opens the book and simulates the world of the novel, to such a degree that her deceptions and reticences can profoundly unsettle, is testament to the power of fiction to communicate. The novel uses the Victorian obsession with glass to suggest flaws in one culture's desire to read others by their visible surfaces, which Lucy uses to hide more than she reveals. But by the very conventions it frustrates the novel also demonstrates art's real capacity to transport audiences into other interiorities.

Brontë's letters reveal that contemporary readers did respond to Lucy and M. Paul as if they were real people, with lives lived outside the bounds of the novels' covers. Brontë had received mail from readers who asked for the truth about M. Paul's drowning. She responded so as to leave everything still a "puzzle" (Gaskell 415). In 1853 letter to George Smith, her publisher, she again claimed that she meant the reader to judge:

> With regard to the momentous point – M. Paul's fate – in case any one in Future should request to be enlightened thereon – they may be told that it was designed that every reader should settle the catastrophe for himself, according to the quality of his disposition, the tender or remorseful impulse of his nature. Drowning and Matrimony are the fearful alternatives. The Merciful… will of course choose the former and milder doom – drown him to put him out of pain. The cruel-hearted will on the contrary pitilessly impale him on the second horn of that dilemma – marrying him without ruth or compunction to that – person – that – that – individual – "Lucy Snowe."(Wise and Symington 55-6)

To the last Lucy remains "a personage in disguise" (Brontë 341) even as she narrates her censored feelings indirectly via striking visual image. That she seems a "personage" at all, however, offers evidence of a different kind, of the meeting of minds in fiction.

That writing and visual art might provide analogous "windows" into other lives is suggested by one of Hawarden's images (Figure 12). Viscount Hawarden stands before a side table positioned in front of a window. One of his wife's cameras rests on the table, looking like a windowed box; Lord Hawarden is posed as if writing on top of the camera. Writing and photography appear to be analogous activities, both of which capture many dimensions in two and provide window-like glimpses into other consciousnesses. Another photograph (Figure 13), unusual among the upstairs domestic scenes in that no people are visible, shows a book propped upright on a chair, open to an illustration of a woman and children. Hawarden positions a book of images in the place where she habitually posed a living daughter (then preserved in two dimensions). Images take the place of faces, which themselves survive as images evoking interpretive engagement.

I see Hawarden's domestic interiors as assertions of her imaginative power, and Hawarden herself as a Prospero who invites recognition of possibilities available to the active mind. Her domestic interiors are thus "contained" only insofar as the mind is contained within the skull. Her eyes, her camera lens, her house's windows, and the metaphorical "windows" offered the imagination by books and art mirror each other as apertures offering glimpses of the infinite. Likewise Lucy ultimately seems to conceal only because Brontë has ushered readers into a space of revelation, where they expect to find interiority. As fiction the novel has the capabilities of a guided dream or a simulation, to take readers inside others' inner lives. Wherever this interpretation glimmers through my argument, it evidences my own mindreading biases at work. The surfaces of Hawarden's photographs and Brontë's pages, no less than the mirrors and windows within them, suggest and provoke such reflection.

Figure 10: Clementina Hawarden, PH.457:335-1968. 1861. Victoria and Albert Museum, London.

Image removed for copyright reasons

Figure 11: Clementina Hawarden, PH.457:71-1968. c. 1861-1862. Victoria and Albert Museum, London.

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CHAPTER 4: COMMUNITY UNDER STUDY IN *MIDDLEMARCH: A STUDY OF PROVINCIAL LIFE*

Marian Evans spent most of the summer of 1856 on the British coast with George Henry Lewes, looking for marine specimens such as mollusks, anemones, and seaweeds, which they brought indoors for further study using a microscope. Natural history, a popular Victorian passion, had cast its spell over Lewes, who had grown "obsessed with vision" in its pursuit: the forms he saw through his microscope during these heady months, he later wrote, "filled [his] dreams with fantastic images" and "came in troops as [he] lay awake during meditative morning hours" (Merrill 52, Lewes *Sea-Side* 34). Marian shared his enthusiasm, and she recalled that "every day I gleaned some little bit of naturalistic experience, either through G.'s calling on me to look through the microscope or from hunting on the rocks" ("Recollections" 266). Her diary recounts their shared study: morning "hunts" in the tide pools, afternoon work with the microscope, evening reading in zoology, botany, and natural history.

Her writings from these months also record her budding consciousness, under the influence of her naturalist study, that artists (authors included) bear a weighty responsibility to aid visualization and perspective change in their audiences. The artist's faithful observation and representation of specific individuals within their particular communities, she claims, elicits a profounder and more sympathetic response than even the most eloquent diatribe from statesman or social reformer. Like the natural historian whose texts teach theory only gradually, via the accumulation of specific, concrete examples, so the artist improves a social body with “picture[s] of human life” rendered in a degree of particularity that “surprises even the trivial and the selfish into that attention to what is apart from themselves, which may be called the raw material of moral sentiment” (Eliot “Natural History” 54).[97] Artists perform “the Natural History of social bodies,” for they embody abstract conceptions in vivid specifics that demand audience engagement (Eliot “Natural History” 72).[98] Audiences who respond to the artist’s “picture of human life” learn that “moral sentiment already in activity” that “[a]ppeals founded on generalizations and statistics” require for effective change (Eliot “Natural History” 54). Artists are necessary for social policy to perform its work. Natural history as Evans writes about it in the summer of 1856 thus comes to seem a kind of general epistemology for wise decisions as well as for artistic practice; both require a basis in precise observation and awareness of one's own subjectivity.

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[97] “Natural History,” as she describes it elsewhere that summer, is explicitly concerned with the particular, the specific, and the concrete – with taxonomy and theory largely as it offered clarity about morphology. “I never before longed so much to know names of things as during this visit to Ilfracombe,” she writes in “Recollections of Ilfracombe;” “the desire is part of the tendency that is now constantly growing in me to escape from all vagueness and inaccuracy into the daylight of distinct, vivid ideas.” (272).

[98] “Just as the most thorough acquaintance with physics, or chemistry, or general physiology” she writes in the same review, titled “The Natural History of German Life” (July 1856),

> will not enable you at once to establish the balance of life in your private vivarium, so that your particular society of zoophytes, molluscs, and echinoderms may feel themselves, as the Germans say, at ease in their skin; so the most complete equipment of theory will not enable a statesman or a political and social reformer to adjust his measures wisely, in the absence of a special acquaintance with the section of society for which he legislates, with the peculiar characteristics of the nation, the province, the class whose well-being he has to consult. In other words, a wise social policy must be based not simply on abstract social science, but on the Natural History of social bodies. (“Natural History” 71)

It is therefore the special responsibility of the artist to bring the “daylight of distinct, vivid ideas” to bear on the pressing social questions of the day. In the same July review she castigates English artists for idealized pictures of peasant life, “under the influence of traditions and prepossessions rather than… direct observation,” and then asserts,

> The greatest benefit we owe to the artist, whether painter, poet or novelist, is the extension of our sympathies. Appeals founded on generalizations and statistics require a sympathy ready-made, a moral sentiment already in activity; but a picture of human life such as a great artist can give, surprises even the trivial and the selfish into that attention to what is apart from themselves, which may be called the raw material of moral sentiment. […] Art is the nearest thing to life; it is a mode of amplifying experience and extending our contact with our fellow-men beyond the bounds of our personal lot. All the more sacred is the task of the artist when he undertakes to paint the life of the People. Falsification here is far more pernicious than in the more artificial aspects of life. (“Natural History” 54)

A truly “wise social policy” relies on intentional direct observation of specific individuals within their particular communities in addition to “abstract social science” (“Natural History” 71).

These summer months under the spell of natural history proved a turning point in the careers of both Lewes and Evans. Lewes afterwards joined Philip Henry Gosse and J. G. Wood as one of the great popular Victorian writers on natural history.[99] "George Eliot," meanwhile, turned her hand to fiction. Near the end of their summer travels in 1856 she began to imagine the plot of *Amos Barton*, and soon after began "a novel that examined the enclosed world of provincial clerical life with the same rigor, determination and precision she had brought to her inspection of rock pools" (Stiles). Under her pen name she would go on to author several revered Victorian novels, including *Adam Bede* (1859), *The Mill on the Floss* (1860), *Middlemarch* (1871-2) and *Daniel Deronda* (1876). Lewes' and Eliot's working lives remained so intertwined that she was able to complete *Life and Mind* for Lewes after his death in 1878; her novels likewise show his ongoing influence in their constant allusion to Victorian science.

This chapter argues that *Middlemarch*, despite its distance in time from the summer of 1856, continues Eliot's preoccupation with natural history. In fact, I suggest that it illustrates the full flowering of her naturalist-inspired effort to create art that "extends the sympathies" through observation of particular individuals within a community context – a style of observation that the novel both models and teaches. Begun towards the end of the "heyday of natural history," in 1869, the novel adapts rhetorical strategies common to Lewes and other naturalist writers at the time to envelop the reader in the text's world, and to practice the reader in the kind of observation Eliot earlier recommended in her nonfiction prose as a "Natural History of social bodies."

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[99] He turned his work in the rock pools into a series of articles for *Blackwood's Magazine*, republished in volume form as *Sea-Side Studies* in 1858; *Studies in Animal Life* followed in 1862. Interest in organic life continued to inspire his writing in popular articles and his final opus, *The Problems of Life and Mind*.

Victorian natural history writing is highly "participatory," in that it ushers readers into an imagined "community of wonder," in which multiple perspectives are important for constituting general knowledge (Merrill 52). Writers frequently discuss their experimental observations in plural, incorporating readers into a "we" who view together, excitedly direct their readers to "see" and "look" at the marvels they note, and describe their activity in such detail that a reader can both visualize and also physically reproduce the observational scenario. Despite securing "virtual witnesses" in this way, these writers also encourage readers to use their texts as guides to their own observations: readers are meant to "get a microscope," collect specimens, and above all see for themselves, whether in the field or through the lens (*Animal Life* 8).[100] Though these readers must learn certain strategies for empirical observation, natural history writers do not try to discipline subjectivities; rather they express sanguinity about the possibilities inherent in multiplied perspectives. Microscopists examine their specimens at varied degrees of focus, just as all natural history enthusiasts observe their subjects both up close and within their habitats. Similarly, just as natural historians pay attention to community when observing animals in the field, so they pay attention to contingencies of condition in microscopical observation. Differences in condition and subjectivity teach the savvy observer more, rather than less, as long as he or she accounts for them.

Middlemarch overtly compares these habits of observation inherent to natural history and microscopy (itself a crucial component of Victorian naturalist study) to the process of sympathy – a comparison that some critics have taken to represent Eliot's doubt that accurate knowledge of others' perspectives is possible. I suggest that this reading results from incomplete understanding of both Eliot's influences, and also of her sources in Victorian empiricism, particularly popular natural history. In addition to the novel's overt comparisons, it also *mimics* popular natural history writing in its participatory character. Eliot asks readers to "see" and to "look." She describes the thoughts of individual characters, of small groups of friends and neighbors, and of their shared community with a perspective always vacillating, like the natural historian's, between the panoramic and the particular. She traces the consequences of characters' perspectives not just to show how limited perspectives can lead to disaster, but also to demonstrate how varying perspective provides crucial information. In short, Eliot not only asks the reader to take a naturalist's attitude, she creates a lens through which the reader views her subjects at varying powers as a naturalist would do.

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[100] I refer to Shapin's idea of "witnesses" to scientific experiments described in such detail that readers can both visualize and reproduce them. See "Pump and Circumstance: Robert Boyle's Literary Technology."

To revise critical understanding of Eliot's statement on sympathy with *Middlemarch* is also to refine conceptions of vision in the nineteenth century and to propose one answer to this dissertation's questions about how readers become involved in other lives via visualization. When Eliot recommends and models a vacillating perspective, she adapts rhetorical strategies for visualization that popular natural history writers use to help readers learn observational practices, particularly with the microscope. Eliot thus clarifies the process of sympathy with another person through comparison to concrete actions that might well even be familiar through motor habit to her Victorian audience, given the widespread enthusiasm for natural history. She turns abstract concepts like "perspective" and "sympathy" into concrete experience conveyed through language that Dual Coding Theory suggests should be easier to process, to visualize, and to remember. These moments of sympathy may even be encoded triply – twice in the nonverbal system, as visual and as motor imagens. The novel thus becomes not just a guide but also an instrument: it both illustrates and *practices* the reader in observation as it leads to sympathy. Middlemarch is a story that *exercises* perspective change.

***Middlemarch* and the Microscope**

Eliot's novels are famously full of scientific allusion, and *Middlemarch* is no exception. One of the novel's oft-repeated allusions is to the microscope, as Mark Wormald notes, which was itself "central to so much mid-nineteenth-century science" – including natural history (Wormald 502, Merrill 30). Although the microscope was not a new invention, it "came into its own" in the nineteenth century, when improvements in manufacture and design made the instrument "widely available and relatively cheap" for the first time (Merrill 116). At the same time, natural history was evolving from the "despised" activity of a few enthusiasts into a truly national craze (Barber 13-14). Because it taught observational habits, offered a never-ending source of useful facts, and pointed towards a greater appreciation of God's handiwork, natural history eminently qualified as "rational amusement" in an age that liked nothing better (Barber 16).

Moreover, the study of natural history was available to anyone who wished to pursue it, including children, women, and the working class. Equipment included financially accessible gear like nets, pins, boxes, and jars – and a reasonable microscope could be had for "two or three guineas" (Barber 35).[101] No university degree was required, or even offered. The enthusiasm crossed class boundaries, offering

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[101] Even to those for whom this price was too expensive, the microscope would be a familiar sight from exhibitions and lectures, particularly the "oxy-hydrogen" microscope that was startling Londoners with views of microscopic animals cavorting in a drop of water by the early 1830s (Merrill 119).

"improvement" to working people and respectable entertainment for the middle and upper classes.

Finally, besides its capacity for amusement, its utility, and its accessibility, natural history offered great "visual appeal" (Barber 85). Flowers, birds, shells, seaweeds, ferns, even strange underwater creatures provided excellent satisfaction for nineteenth-century curiosity when examined through lenses, under microscopes, and via increasingly lavish book illustrations. Brought into drawing rooms in boxes and books, and even live in aquariums and Wardian cases, collections of natural objects added beauty and visual interest to Victorian homes – and inspired wallpapers, upholstery, fabric, and decorative carving as well (Barber 85-86, 111-124). In this context of truly widespread cultural enthusiasm for the visual delights of natural history, the microscope quickly became a ubiquitous tool for pleasurable study and useful work.

Middlemarch's narrator offers herself explicitly as an historian with a decades-old story to relate, but the moments when microscopy infuses this historian's language provide further insight into how Eliot intends her novel to be a "study" of Middlemarch as representative provincial community. The narrator can seem as much a *natural* historian as an historian of human activity. She writes,

> I… have so much to do in unravelling certain human lots, and seeing how they were woven and interwoven, that all the light I can command must be concentrated on this particular web, and not dispersed over that tempting range of relevancies called the universe. (*Middlemarch* 132)

This passage makes an obvious comparison between the "interwoven" lives of Middlemarchers and familiar Victorian images of web-like networks. The most direct reference for the need for light is the one Gillian Beer notices: the historian is like the weaver who needs a "concentrated light" to see her work. But as Beer also suggests, the web can connote not just fabric but ecology. It thus also offers a comparison between the activity of the historian-narrator and that of the microscopist, whose instrument did not at this time project its own light (Beer 156-160). Using the microscope required the microscopist to take full advantage of light in the environment: guidebooks like recommended users place their instruments near a window with bright but indirect light, or use an oil lamp for evening study (Quekett 181-2, Lankester 9).[102] Microscopists employed accessory implements such as lenses, called condensers, and reflecting mirrors to "catch the rays of light and concentrate them on the object" under study (Lankester 8-9). Like a microscopist concentrating all available light on the object he or she wishes to see clearly, Eliot's narrator must center all her powers of observation and interpretation on this small circle of humanity to understand and convey its activity accurately.

This comparison of narrative interpretation to microscopy becomes the reverse, a comparison of microscopy to the interpretation of human events, in a later passage in which Eliot discusses the desires of Tertius Lydgate. Her narrator describes Lydgate's ambitions in terms of microscopy when she informs us that the young doctor

> was enamoured of that arduous invention which is the very eye of research, provisionally framing its object and correcting it to more and more exactness of relation; he wanted to pierce the obscurity of those minute processes which prepare human misery and joy, those invisible thoroughfares which are the first lurking-places of anguish, mania, and crime, that delicate poise and transition which determine the growth of happy or unhappy consciousness. (154)

The microscope is the "eye" that Lydgate plans to use to discover not just the "primitive tissue" of life but also the origins of Fever in the "minute processes" of biology (Eliot

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[102] Gas lamps were preferable to candles because their beams do not flicker. On the other hand, the light of a gas lamp is yellow and can therefore interfere with clear vision in a different way. Quekett recommends certain shades or a particular kind of gas lamp for the microscopist who wants to avoid this problem (489).

139, 154).[103] But Eliot's language also connotes human fates beyond physical or mental illness. Just before this passage, her narrator remarks Lydgate's inability to apply the arduous thought and committed observation he brings to microscopy to "the complexities of love and marriage" – the very same social ties that will entrap him in just a few chapters (154). The narrator, by contrast, seeks to utilize precisely this degree of focused attention, analogous to thorough microscopy, to trace the hidden origins of "happy or unhappy consciousness," and remain alert to the effect of even the most minor conditions on eventual circumstances. Eliot's language assumes a certain scientific literacy among her readers, as if she can count on her public to recognize her allusions and their implications. Her historian narrator seems thoroughly familiar with microscopy as the tool of the scientist and natural historian. Middlemarch, the town, becomes the object of the "eye" of Eliot's research – her "study" – and *Middlemarch*, the text, will search out its hidden connections and varied perspectives via focused observation.

Questions of Accuracy in Eliot's Microscopical Allusions

As Mark Wormald notes, "deconstructive readers" tend to assert that the famous passage in which Eliot compares the work of interpreting others' perspectives to microscopy expresses doubt about its possible efficacy that undercuts any other more positive statement of sympathy the novel makes (501-502). In this famous passage discussing Mrs. Cadwallader's matchmaking activity, Eliot writes:

> Was there any ingenious plot, any hide-and-seek course of action, which might be detected by a careful telescopic watch? Not at all: a telescope might have swept

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[103] Although germ theory was not validated until after Eliot wrote in the early 1870s, precursors to the idea that microscopic entities might cause illness were appearing even in popular science books by mid-century. Witness for example Gideon Mantell's 1850 recommendation of microscopy for its benefits to humankind, for "it is probable that many of the most serious maladies which afflict humanity, are produced by peculiar states of invisible animalcular life" (89). Lydgate's ambition is thus in line with the nineteenth-century scientific trajectory towards various related discoveries that microscopic causes can have macroscopic effects on individual and community health.

> the parishes of Tipton and Freshitt, the whole area visited by Mrs Cadwallader in her phaeton, without witnessing any interview that could excite suspicion…. Even with a microscope directed on a water-drop we find ourselves making interpretations which turn out to be rather coarse; for whereas under a weak lens you may seem to see a creature exhibiting an active voracity into which other smaller creatures actively play as if they were so many animated tax-pennies, a stronger lens reveals to you certain tiniest hairlets which make vortices for these victims while the swallower waits passively at his receipt of custom. In this way, metaphorically speaking, a strong lens applied to Mrs Cadwallader's match-making will show a play of minute causes producing what may be called thought and speech vortices to bring her the sort of food she needed. (*Middlemarch* 55)

In this passage, Eliot first suggests and then rejects the telescope as a useful aid for studying Mrs Cadwallader's social activity. Though this instrument enhances the user's sight to enable super-human observation, the telescope's lens is not powerful enough to descry the true causes of the activity Mrs. Cadwallader seems to set in motion. A microscope provides a better instrument for the task. But as experienced microscopists recognize, the power of the lens can make a vast difference to perceived degree of detail, which in turn will alter possible interpretations an observer can make about what he or she sees through the instrument. Seen with one lens power a microscopic specimen seems to vacuum in its prey as if these smaller protozoa were magnetized coins ("animated tax-pennies"), but a stronger lens power will "reveal" the existence of the specimen's tiny moving hairs, or cilia, that perform the work for the passive larger "creature."

In this way readers' possible interpretations of Mrs. Cadwallader's activity are like the possible interpretations of the behavior of Rotiferas, a phylum of microscopic "animalcules" or protozoa that it would have been hard for Eliot to avoid in her naturalist reading. The name, which translates to "wheel-bearer," derives from the apparently rotating "wheels" that Rotiferas carry near their mouths. As scientific popularizer Philip Henry Gosse describes it in 1859, the rapid rotation of these wheels "was believed to be the real fact by the earlier microscopists" who used less powerful microscopes, but it is actually "an optical illusion, depending on the nature of ciliary movement" (*Evenings* 273). By the time Gosse wrote in the middle of the nineteenth century, better microscopes had revealed the existence of cilia, or tiny hairs arranged in rows that wave in successive motion. Gosse's detailed explanation of "ciliary movement" clarifies that waves result in "an alternate succession of dark and light spots blending into each other," which produces the impression of rotating movement in the Rotifera's "wheels" (*Evenings* 274-5). Where microscopists using weaker lenses believed the Rotifera used rotating wheels to vacuum in food, better lenses revealed that this evident activity is actually passive wave motion producing a vortex. This optical illusion and its subsequent exposure provided Victorians with a concrete example of both the ongoing improvements to the microscope and also the various possibilities for (mis)interpretation it enabled. Similarly, says Eliot, to judge Mrs. Cadwallader's effects on the basis of her apparent meddling activity – without accounting for necessary detail – would be to miss the way social currents bring her material, as if one had interpreted her observed behavior with a too-weak lens.

One way to read this comparison of community relationships to microscopic interpretation is to notice the contingency and inherent fallibility of the instrument as a mediator. Indeed, critics have pointed out the various ways in which Eliot may suggest that human empathy, dependent as it is on fallible human perception, is hopelessly conditional. Sally Shuttleworth, for instance, points out accurately that characters do misinterpret others based on their physical appearances, only to discover that reality fails to correspond (Shuttleworth 146). If the town of Middlemarch is an organism, says Shuttleworth, then it is one in conflict with itself: the goal of "organic unity" remains "impossible" for groups of autonomous individuals unable properly to see or to understand one another (Shuttleworth 151).[104]

A More Accurate View of Victorian Microscopy within Natural History

Yet an exclusive focus on the supposed impossibilities of interpretative accuracy, in microscopy and in Eliot's adaptation of it, may obscure historical feeling on the subject. As I have mentioned, the late eighteenth and nineteenth centuries witnessed remarkable improvements to the microscope as an instrument.[105] Perhaps more importantly, as Jutta Schickore has noted, rhetoric of optimistic perfectibility pervaded much public discussion of the topic, even as popularizers of microscopy continued to assert the value of carefully controlled, thorough observation. John Quekett's tome, *A Practical Treatise on the Use of the Microscope,* which ran to three mid-century editions, begins with a narrative of constant improvements to the microscope over the previous century. Quekett proclaims it the "most important instrument ever yet bestowed by art upon the investigator of nature" (39).[106] Similarly Edwin Lankester's *Half-hours with the Microscope* asserts "The Compound Microscope is now, undoubtedly, one of the most perfect instruments invented and used by man…. [I]n the Compound Microscope, we have an instrument working up to the theory of its construction. It does actually all that could be expected from it" (5). Lankester follows this with an exposition of improvements to the microscope over the previous century, which have brought it to this state of perfection.

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[104] See also J. Hillis Miller, "Optic and Semiotic in *Middlemarch*." Shuttleworth argues that Eliot adopts the "passive observer" role of the natural historian for *Adam Bede*, but in *Daniel Deronda* and *Middlemarch* takes on the role of the "creative, experimental scientist" (xii). I agree with Shuttleworth that Eliot's narrator takes an active role in *Middlemarch* but suggest both that the relationship between the naturalist writer and reader was more active and participatory than Shuttleworth acknowledges, and also that Eliot's narrator's voice and role in *Middlemarch* is much like that of the naturalist writer. This argument coincides with my argument that Eliot does admit the possibilities of mistake in ways Shuttleworth has identified, but that Eliot is more optimistic about the possibilities for successful interpretation than Shuttleworth wants to admit.

[105] Early microscopes were subject to distortions and aberrations: microscopes with a single lens offered weak magnification, but adding lenses to improve the magnification decreased available light and caused a halo of color to appear around the object being viewed. Improved design and glass manufactory eventually produced, in the second quarter of the nineteenth century, the compound achromatic microscope, an instrument that solved both problems and that became increasingly easy to use and financially accessible as the century progressed. The microscope thus underwent real, and substantial, improvements until it was simultaneously quite a sophisticated, yet also familiar, instrument by 1870.

[106] Later in the same guide, he quotes his own earlier accolade with the addition of the adjectives "most perfect" and "efficient" (459).

An excessive focus on the disrupting potential of subjective error among modern critics may result from a more general modern suspicion of Victorian empiricism, often thought to promise pure (and dogmatic) insight into reality. Victorian empiricism as Peter Garratt redefines it for modern understanding – and his analysis specifically includes Lewes and Eliot – held both that knowledge requires a perceiving self, and also that accumulating knowledge ceaselessly changes the self. In other words, experience produces the self and the self's knowledge, simultaneously. Knowledge is inextricable from selfhood: to say that a perceiving subject should seek to attain objective knowledge, or knowledge as free as possible from the influence of subjective perspective, is to speak impossible nonsense. To know *is* precisely to be situated within a certain "place, perspective, and personality;" it is to take up a certain, particular relationship to the known and to other knowers (Garratt 15-16). Increasing awareness that vision is inherently subjective only increased the commitment of this influential strand of empiricism to its position that the wise knower will both accept the limitations of his or her personal knowledge, and also seek the benefit of others' views.[107] If knowledge is

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[107] As Garratt puts it,

> To be an empiricist was at once to place trust in the immediacy of one's encounter with reality, and also to seek a description of reality that might hold beyond the vagaries and limitations of personal point of view. As this contradiction implies, the relationship between observer and observed, knower and object, was thus understood to be radically unstable. But it was not assumed by empiricist writers that this instability could simply be resolved by, say, envisioning a way of knowing that neutralized the contingencies of spectatorship – for example, by using magnifying

isomorphic with a certain perspective or position, then it will be subjective no matter how good the microscope. Rather than being the cause for concern and dismay, doubt and despair, "the incompleteness of our vision" became simply part of the circumstances of knowing – and sometimes even a quality to "celebrate" (Garratt 16).

Modern suspicion may also result from considering Victorian microscopy apart from natural history, which was an activity that bridged an emerging divide between subjective and objective epistemologies. Although nearly all natural history writers this chapter covers assert the importance of precise observation, natural history as they practice it is "aesthetic science, science pursued out of a personal sense of awe and beauty" (Merrill 79). This aesthetic meant that Victorian naturalists hunted a "quarry… as much subjective as objective" (Merrill 83). Naturalists who shared their observations spoke to a community who defined "truth" partly in terms of a felt personal relationship with the natural world. This does not mean that accuracy was unimportant to Victorian naturalists, who did seek to discredit the nature myths of earlier generations. It means that an equally important aesthetic quality, grounded in personal response and facilitated through shared emotion, balanced objective precision in Victorian popular natural history. Once again, then, popular natural history provides a context in which knowledge is "conditioned by context, and conceived in terms of relationship" (Garratt 16).

That Victorians were aware of the errors inherent in subjective vision and the fallibility of instrumentation is evident not just in popular writers' care to praise contemporary microscopes' advanced state, but also in their more direct address to such concerns. As Lewes writes in *Sea-Side Studies*, subjective results wherein "men… see

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> aids and other visual technologies to eliminate error. The deficiencies of the eye were not the primary question, nor was it just a case of applying oneself more and more diligently to the business of seeing until an accurate view of reality was achieved…. (16)

what they wish to see, and what no one else can recognise" are "not the fault of the instrument" but the fault of the user (37). And yet this was cause for recourse to the community, rather than cause for despair. The good natural history microscopist, aware of vision's reliance on inference and expectation, proceeds with caution and checks observations with others. Good microscopy relies on a community of observers, all of whom take one another into account as the community decides truth of interpretation.[108]

Accepted truth lies in the consensus of this community, which relies on the contributions of its members who share their observations of their shared subject. As Lewes puts it, "In the present state of knowledge, the independent observations of every one who has had any experience cannot but be welcome" (117). With so much left to learn, these writers suggest, the progress of the field requires as many individual observers as possible, and demands that each new observer see for him- or herself rather than take the word of written authority. Lewes instructs his readers to "keep the mind in a state of loose moorings… not believing (but simple acquiescing, and that in a provisional way) in any fact which is not clear in the light of its own evidence" until they have a chance to see or test it themselves (*Sea-Side* 100-101). "So long as we unsuspectingly accept what is repeated in books… so long as we have eyes but observe not" the field will falter (Lewes *Sea-Side* 154). Observation itself becomes a kind of experimental test of what others have seen and reported. "From the illumination of many minds on many points," Lewes writes proverbially, "Truth must finally emerge" (*Animal* 41).

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[108] Popular microscopical writers are clear that their readers must train themselves to be skilled observers, through practice and by experience. Inexperienced enthusiasts who expect to begin willy-nilly and with ease will be disappointed, as Lewes points out in *Sea-Side Studies*. Finding specimens to study is the first problem. A budding natural historian must learn "where to look for [specimens], how to see them when there, and how to secure them when seen" – tasks that Lewes' writings illuminate in some detail (*Sea-Side Studies* 15). The hunt requires a commitment to study using guides, a deliberate patience in watching, and attention to the proper equipment for captures and transport.

Disciplined habits should extend to the working space indoors, as Hogg, Lankester, and Quekett all make clear. Instructions extend from location within the home to care for apparatus. Budding microscopists should choose a clean room with a window, preferably facing north and free of outdoors obstructions, and use a sturdy, steady table for their equipment. Equipment should be neatly stored and labeled, and if at all possible, the microscope and its apparatus should be left out, ready for use at a moment's notice, and covered with a bell jar or other case to keep dust away (Hogg 53-4, Quekett 181-182, Lankester 12-13 and appendix by Ketteringham 82). Such rigor allows the amateur naturalist to use well "even those scraps of time which occur in the busiest life" and learn "[h]abits of observation, of patient research, of accurate discrimination, and orderly arrangement" (Landsborough 77). Patience and perseverance must accompany the new naturalist in using the microscope, as a new observer gradually learns to distinguish what he or she sees through the eye-piece. Yet if "all seems confusion to the inexperienced eye" that gazes at the "life" in a water drop, Agnes Catlow suggests that observers who persist will quickly learn to distinguish species one by one, until "each drop at last produces so many old friends, that we have leisure to watch their movements, and be amused with their varied habits of life" (182). Catlow's prose suggests not just the progress of an individual's scientific knowledge, but the familiarity of intimates and neighbors. This training, then, ushers the budding microscopist into a community that includes other microscopists and, on some level, the familiar creatures they all study.

As entrancing as these vivid texts can be, therefore, they are meant to usher the reader out of their pages and into personal study – which will potentially make the reader useful to the wider community. Repeatedly these writers suggest that even the most vivid description or beautifully detailed illustration fails to convey the full wonder of a specimen seen in person. They claim that their works offer only an introduction to the world of wonders that is microscopy and natural history. They echo one another's calls for the new observations of dedicated (even amateur) researchers. Some even appear to welcome correspondence from readers who can confirm or contradict an author's inductive conclusions. W. H. Harvey writes that "the humblest worker in the field, if careful to see with his own eyes, and record faithfully what he sees, can materially assist the labours of the author" in perfecting his series of natural history monographs (17). Meanwhile Quekett asserts (of himself) that "he will always be glad to receive from fellow-labourers any hints bearing on matters relating to the Microscope, and ready to acknowledge the source from whence such information may have derived" (ix).

Thus these texts open tension between the universal and the particular, one balancing the agreed standards of disciplined study and practiced observation, and the mandate of the individual researcher who puts what he has read to the test. When J. G. Wood writes that "No two practical microscopists ever set about their work in the same manner… and each will arrive at most valuable results, though by different and sometimes opposite roads" he may be mostly reassuring his intended audience that they too can participate in microscopy even without the full range of expensive equipment (4-5). Yet beyond the morally improving benefits of science to lower class readers, the repeated attempts of such microscopy texts to engage a wide audience suggests a genuine interest in sparking individual research. Such interest can seem a positive, democratic development today, but may more accurately reflect a felt need for multiple observers to balance the subjectivity of any single researcher: just as single observations are less useful for accurate interpretation than multiple observations under varied conditions, so are the observations of single workers less thorough and accurate than the knowledge built by observers connected within a community of exchange and correction.

The Participatory Community of Natural History and *Middlemarch*

The stories that natural history writers offer are the medium of their community, meant to share observations and secure virtual witnesses, but also to turn readers into members. As Lynn Merrill notes, Victorian natural history writing is inherently "participatory" (52). Natural history writers like Lewes, Catlow, W. H. Harvey, and J. G. Wood adopt "rhetorical strategies" implicitly intended "to generate wonder in the reader" by including readers in the action (Merrill 53). For instance, Lewes frequently speaks in first-person plural, so that he seems to act in concert with the reader. "With our net we skim the surface" of a pond, he narrates, "and among the mass of leaves and weeds we find great varieties of tiny creatures, which we remove with the camel-hair brush, or our fingers, and deposit in the glass jar" ("Only" 585). Gosse uses this technique as well. A typical passage begins "If we take one of the stone-boring Mollusca, a Pholas or Saxicava for example… and place it in a glass vessel of sea-water, it will not be difficult to detect [its] currents… even with the naked eye" (*Rambles* 64). Elsewhere he writes, "Now, by putting this specimen into a glass trough, and placing it under a low power of the microscope, we shall see what an exquisite piece of mechanism it is" (*Evenings* 236). "We" even seem sometimes to share a history as well as the present, as Gosse suggests: "When we were at the sea-side last summer we bought, you may remember, of a poor widow whom we met on the beach, a little basket of dried sea-weeds" (*Evenings* 71).

Direct commands are another frequent rhetorical tactic, written as if the writer teaches a reader at his side. "Here is a pond with a mantling surface of green promise," writes Lewes; "dip the jar into the water" and "Hold it now up to the light" (*Animal* 50). Then, once specimens have been caught, Lewes writes as if readers peer over his shoulder to help identify the discovery: "Give me the camel-hair brush. Gently the dab [of color] is removed, and transferred to the phial. Shade of Trembley! it is a Polype" (*Animal* 67-8). Similarly, Gosse instructs his readers, "just take your seat in front of this tank, and with a lens before your eye, watch the colony [of barnacles], which is seated on that piece of stone, close to the glass side" (*Evenings* 235). Likewise Charles Kingsley exhorts readers who want to see what treasures hide beneath a sea-side boulder. "Now the crowbar is well under" the rock, he writes, "heave, and with a will" and "you" will be rewarded with the sight of some truly unusual creatures (114).

In keeping with the link between vision and curiosity, these exhortations most often direct readers to "see" what the text describes in great detail for easier mental visualization. Sometimes such visual imaginative participation includes reference to illustrations, but just as often (and within the same texts) writers assume readers willingly visualize the wonders they describe. Writers like Lewes and Gosse often address their audiences as if the reader is physically by their side, observing, even as their rich descriptions implicitly aid the reader who could participate only imaginatively. Sometimes these directions acknowledge that the reader must imagine what the writer describes, as when Kingsley issues the invitation to "Follow us, then, reader, in imagination" down to the shore (61). "And once there," he continues, "before we look at anything else, come down straight to the sea marge; for yonder lies, just left by the retiring tide, a mass of life such as you will seldom see again" (Kingsley 61). Then begins Kingsley's descriptions of what he exhorts readers to "see," to "give a sharp look-out for," to "look" at (63, 89, 122, 128).[109]

Eliot's famous microscopical metaphor uses this language of the popular natural history community. "Even with a microscope… *we* find ourselves making interpretations which turn out to be rather coarse," she writes, including the reader in the activity of interpretation (*Middlemarch* 55, my emphasis). "We," reader and writer together, seek to understand the activity of the creatures in the water drop, and of the humans in Middlemarch. As she continues the metaphor, Eliot uses the language that Lewes, Gosse, and other natural history writers use when they direct readers to "see" what must implicitly be visualized. "[F]or whereas under a weak lens you may seem to see a creature exhibiting an active voracity into which other small creatures actively play… a stronger lens reveals to you certain tiniest hairlets…" adapts the popular natural history writer's rhetorical strategy of detailed descriptions that facilitate the visualization of what the writer directs readers to "see" (Eliot *Middlemarch* 55). In this passage, Eliot's language becomes explicitly participatory: readers become part of the community of observation and interpretation. Though individuals within the community may make mistakes – reaching one conclusion with a weak lens, and another with a stronger lens – the community nevertheless eventually reaches the truth by advancing shared interpretations.

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[109] Similarly, Agnes Catlow begins her text with an instruction that acknowledges the work readers' imaginations must do: "My readers must fancy themselves spirits," she says, "…and so pass with me through a wonderful brazen tunnel" of the microscope to "behold," "examine," and "see" the marvelous creatures it reveals – through her rich descriptions (x-xvii). More often, naturalist writers simply exhort their readers to "see" without any qualifications, or assume that readers can indeed view. Like so many of his peers, visual curiosity propels Lewes' studies and fires the prose he wrote to share his obsession; again and again he exhorts readers to "look," to "examine," to "see" objects he describes in loving visual detail. Of a specimen of infusoria, Lewes writes "Observe how transparent it is, and with what easy, undulating grace it swims about…. This is your first sight of that 'ciliary action' of which you have so often read" (*Animal* 10). Of a drop of blood on the microscope stage, Gosse writes, "You see an infinite number of small roundish bodies, of a clear yellowish colour, floating in a colourless fluid" (*Evenings* 30).

Eliot adopts this language again in the famous passage when she implicitly asks her readers to perform an experiment of their own. "An eminent philosopher among my friends," she writes,

> who can dignify even your ugly furniture by lifting it into the serene light of science, has shown me this pregnant little fact. Your pier-glass or extensive surface of polished steel made to be rubbed by a housemaid, will be minutely and multitudinously scratched in all directions; but place now against it a lighted candle as a centre of illumination, and lo! the scratches will seem to arrange themselves in a fine series of concentric circles round that little sun. It is demonstrable that the scratches are going everywhere impartially, and it is only your candle which produces the flattering illusion of a concentric arrangement, its light falling with an exclusive optical selection. These things are a parable. The scratches are events, and the candle is the egoism of any person now absent – of Miss Vincy, for example. (*Middlemarch* 248)

Once again her prose addresses the reader directly; she directs reader attention to a visual phenomenon that she simultaneously describes in such detail that readers can visualize it. Though Eliot commands readerly activity – "your pier-glass," "your candle," which "you" must "place" and observe – her description of the little experiment explains it so well that readers seem to "see" its results without physical sight. The reader is part of a community that verifies observations by sharing them, and presumably, corrects error through reference to multiple viewpoints (unlike Miss Vincy and others "now absent").

In thoroughly describing these observational scenarios, here and in the microscopy passage, Eliot also allows her readers enough information to recreate the situation themselves should they wish. In this way she borrows another rhetorical strategy from popular natural history writers, who facilitate not only visualization but also actual replication when they seem to assume that readers can see what is being described. When Gosse writes "I have here inclosed a small window-fly in the live-box of the microscope, that you may examine the structure of its feet as it presses them against the glass cover," he not only provides a vivid image for mental visualization, but also suggests how a reader might go about actually seeing the fly's feet easily enough (*Evenings* 132). Gosse describes preparations for one session with the microscope thus:

> Here, then, is a hair from my own head. I cut off about half an inch of its length, and, laying it between two plates of glass, put it upon the stage of the microscope. I now apply a power of 600 diameters; that is, the apparent increase of size is the same as if six hundred of these hairs were placed side by side.[…] You see, crossing the bright circular field of view, a semi-pellucid object; that is the hair. You see also a number of fine lines drawn parallel to each other, exactly like those on an ivory rule or scale, with every fifth line longer than the rest, and every tenth longer still. This is the micrometer, or scale by which we measure objects; and the difference in the length of the lines, you will readily guess, is merely a device to facilitate the counting of them. By moving the stage up and down, or to either side, we easily get the hair to be exactly in the centre of the field; and now, by adjusting the eye-piece we make the scale to lie directly across the hair, at right angles with its length…. (*Evenings* 2-3).

With this heavily detailed visual description, Gosse provides enough information for a reader to visualize fairly clearly the actions he describes. As in so many other passages, the reader serves as a kind of virtual witness of his work. But the description also provides a step-by-step guide for the reader who wishes to repeat the observational scenario in his or her own living room, from securing the specimen (the hair) to measuring it with the microscope. Gosse's text, like so many other naturalist texts, exhorts his readers to make their own study of what he describes; his visual details enable readers to follow through. Similarly, Eliot's readers have enough detail to repeat the observational scenarios she describes in a step-by-step process, should they wish. In this way Eliot, like the natural history writers whose techniques she adapts, bolsters the sense of community with an underlying, implicit sense of honest communication: readers can always check her assertions for veracity, by testing her observations against their own.

In these passages, Eliot goes a literary step beyond natural history writers; she adapts their language of shared observation for metaphorical purposes. In both cases, her observation is not (just) about visual phenomena but about how humans interpret each other. Like the natural history writers whose rhetoric she adapts, she narrates a concrete observational scenario. This scenario incorporates the reader as community member and virtual witness, who may repeat the experiment to test it. Then, however, Eliot explains how the scenario is "a parable" for human interaction: for "Mrs Cadwallader's match-making" or for human "egoism" (*Middlemarch* 55, 248). The concrete, specific, particular details of the observational scenario offer an analogue for something otherwise abstract – the effect of personal perspective on interpersonal interpretation. Rather than explaining at length how the human tendency to interpret events and other people according to personal prejudices, desires, and experience can skew the way we understand our lives and other people's, Eliot lets the concrete analogue of this idea communicate it. Her readers participate in a community that shares understanding of this abstract concept through concrete observational experience. The concrete, easy to visualize and memorable, conveys her abstract idea with all the force of virtual – and perhaps even actual, for the average Victorian – experience. Eliot may be asserting the vagaries of perspective, but she is also creating a community of observers who practice sharing it.

Middlemarch as Microcosm

Eliot's translation of microscopy into metaphor extends beyond just the occasional borrowed language. The novel's subtitle, "A Study of Provincial Life," suggests that Middlemarch is a self-contained microcosm that can stand in for a wider world of human relationships, at least in certain (provincial) conditions.[110] In this way Eliot's treatment of Middlemarch mimics the natural history microscopist's study of the miniature worlds the instrument revealed for the first time. In one way, of course, microscopes focus and restrict vision. But in another way, especially for Victorian viewers who were discovering microscopic vision for the first time, the microscope opens up "a new dimension" (Merrill 126). As Merrill writes, "With a microscope or a hand-lens, one could peer down into an entirely unsuspected realm, a miniature landscape, a small but multitudinous universe" (126). Victorian naturalists reacted with wonder and astonishment, marveling at the variety and drama of natural life packed into the tiniest of spaces. Bustling new panoramas appeared in a water drop, on a piece of moss, in a scraping of mildew. Lewes speaks for many when he writes that "the Microscope is not the mere extension of a faculty, it is a new sense" (*Sea-Side* 54). The naturalist's field of vision thus held two views in tension: "the broad view – natural ecology, the landscape as a whole, objects within their setting–and the narrow view – anatomical details, microscopic focus, the object as isolated" (Merrill 81).[111] When microscopic focus also opened broad views of infinitesimal objects within microscopic landscapes, the already "dual perspective" of the naturalist multiplied further (Merrill 126).

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[110] Peter Stiles' article entitled "Vivarium" inspired this insight, though he wrote about *Adam Bede*.

The idea of the rock pool, aquarium, or even single water drop as microcosmic world appears as a familiar conceit among writers popularizing microscopy as a tool for the amateur natural historian. As part of an argument for the utility of visual curiosity, the conceit served as an example of nature's multitudinous, mysterious interconnections and rich variety, replicated in nested macrocosmic and microcosmic scale. Such writers not infrequently describe the life found in these limited watery spheres in terms that make the inhabitants seem almost human. Gosse writes of rock pools,

> What little worlds are these rugged basins! How full of life all unsuspected by the rude stone-cutter that daily trudges by them to and from his work in the marble quarry of the cliff above! What arts, and wiles, and stratagems are being practised there! What struggles for mastery, for food, for life! what pursuits and flights! what pleasant gambols! what conjugal and parental affections! what varied enjoyments! what births! what deaths! are every hour going on in these unruffled wells, beneath the brown shadow of the umbrageous oarweed, or over the waving slopes of the bright green *Ulva*, or among the feathery branches of the crimson *Ceramium*! (*Evenings* 395-6)

This enthusiastic and rather anthropomorphic catalogue of activity reflects Victorian fascination with what George Levine has termed "abundance," the "sense of a newly crowded and complicated life" in which nature has filled every niche with countless marvelous living beings (*Dying* 18). The microcosm is merely a more easily studied version of the (human) macrocosm in its demonstration of the effects of condition and environment, and the “intricate and often subtle patterns of inheritance, cousinship, mutual dependence” that relate living things one to another (Levine *Dying* 18).

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[111] This dialectic also speaks to the ongoing conflict between the methodologies of "field" naturalists, who advocated outdoors observation, and "closet" naturalists who primarily worked indoors with stuffed specimens and bones. The popular natural history writers I study here tend to be field naturalists who also use microscopes indoors to examine specimens they have found and observed outside.

This fascination with wonderful life crammed into the tiniest of spaces extends in popular writing to the microscopic creatures in a water drop. In an 1859 article for *Blackwood’s Magazine*, Lewes wrote,

> “A drop of water.” If I remember rightly, some ingenious writer has made a book with that title…. The drop of water is a microcosm—the world in miniature. Manifold are the creatures swimming, crawling, feeding, and fighting in it. (“Only” 595)

Lewes here repeats the trope of multitudinous and varied activity in even the tiniest microcosm. Though his prose suggests he has not read the book in question, he may be referring to a work entitled *Drops of Water; their Marvelous and Beautiful Inhabitants Displayed by the Microscope*. Published first in 1851, it was written by Agnes Catlow, whose works on botany Eliot mentions having read in her journals.[112] In the introduction to the work, Catlow asks her reader to accompany her on an imaginative journey through the tube of the microscope, into the world of the water drop (x-xi). Four of the following chapters are each devoted to the examination of a different "drop of water," in which microscopic specimens of a different class or family appear.[113]

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[112] Interestingly, Lewes uses the same Rymer Jones quotation in his article that Catlow uses in her book. Lewes writes, “’Take any drop of water from the stagnant pools around us,’ says Professor Rymer Jones, ‘from our rivers, from our lakes, or from the vast ocean itself, and place it under your microscope; you will find therein countless living beings moving in all directions with considerable swiftness, apparently gifted with sagacity, for they readily elude each other in the active dance they keep up; and since they never come into rude contact, obviously exercise volition and sensation in guiding their movements. Increase the power of your glasses, and you will soon perceive, inhabiting the same drop, other animals, compared to which the former were elephantine in their dimensions, equally vivacious and equally gifted. Exhaust the art of the optician, strain your eyes to the utmost till the aching sense refuses to perceive the little quivering movement that indicates the presence of life, and you will find that you have not exhausted Nature in the descending scale. Perfect as our optical instruments now are, we need not be long in convincing ourselves that there are animals around us so small that in all probability human perseverance will fail in enabling us accurately to detect their forms, much less fully to understand their organisation’” (595). Catlow’s use of the same quotation appears on pages 5-7 of her book.

Four illustrated plates appear in Catlow's text, one each for each "drop of water" that she examines. These drops illustrate not only the classes of infusoria on which Catlow focuses, but also a typical tension in natural history writing between the individual and the community, the particular and the universal. In each, the specimens from that chapter appear in a circular arrangement as if the reader gazes at that drop. Though they all belong to the same family or class, and clear ties appear in repeated structures, representatives of each species often appear so unique that the effect retains some sense of miscellany. For example, Drop IV (Figure 12) displays 15 numbered species that Catlow says belong to the class *Rotatoria* (55).[114] Cilia appearing on or near the mouth apertures of nearly every species suggests their relation, and several groups of species share somewhat similar forms–those labeled 9 and 3, for instance, and 13 and 15. But the overall impression is of exotic variety. With the exception of the two examples of "Mastigocerea carinata" (labeled 9), each infusorium is both an absolute individual within the context of the water drop, and also a representative of its kind.

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[113] Catlow remarks early in the text that microscopic creatures would be highly unlikely to segregate themselves this way. But she adopts the plan as easier to follow for the inexperienced reader, for as she writes at the end of the book,

> When a drop of water, tolerably full of life, is placed under the microscope, all seems confusion to the inexperienced eye, the varied forms and rapid movements cause bewilderment… but after some use of the glass this feeling subsides, and some one specimen attracts the attention, its shape is remembered, reference is made to the illustrations, and there some species similar in form will probably be traced; then, by referring to the description, the name of the genus or species may be found, with its characteristics and habits…. [T]hus the confusion is soon lessened, and each drop at last produces so many old friends, that we have leisure to watch their movements, and be amused with their varied habits of life, and extraordinary modes of obtaining food. (182-3)

Though it may be easier to begin with the study of microscopic organisms segregated by type, Catlow's book suggests, practice will produce confidence amid such variety. Confidence then leads to such familiarity that the strange and wonderful inhabitants of a water drop will become "old friends."

[114] The Rotifer vulgaris appears at 11.

Middlemarch the town repeats both these rhetorical strategies, as it is simultaneously an enclosed space and also representative of wider humanity. Like the marine inhabitants of a rock pool washed daily by the waves, which bring its limited sphere into contact with the wider sea, Middlemarch is both a self-contained world, a microcosm of human nature, and also a tiny provincial pool connected in myriad ways with the wider world. As if echoing Gosse's description of the rock pool, Elot writes of "Old provincial society" that it

> had not only its striking downfalls… but also those less marked vicissitudes which are constantly shifting the boundaries of social intercourse, and begetting new consciousness of interdependence. Some slipped a little downward, some got higher footing: people denied aspirates, gained wealth, and fastidious gentlemen stood for boroughs; some were caught in political currents, some in ecclesiastical, and perhaps found themselves surprisingly grouped in consequence; while a few personages or families that stood with rocky firmness amid all this fluctuation, were slowly presenting new aspects in spite of solidity, and altering with the double change of self and beholder. Municipal town and rural parish gradually made fresh threads of connexion…. Settlers, too, came from distant counties, some with an alarming novelty of skill, others with an offensive advantage in cunning…. (*Middlemarch* 88)

Like the inhabitants of the pools, with their "struggles for mastery," their "pursuits and flights," their "pleasant gambols" and "affections," their "arts, and wiles, and stratagems" (Gosse *Evenings* 395-6), the inhabitants of Middlemarch slip and climb, gain and lose, compete and fall in love with a fluidity that suggests a watery medium. Social and cultural "currents" carry some inhabitants along, while other Middlemarch dwellers stand firm, their feet metaphorically planted. Newcomers like Lydgate and banker Nicholas Bulstrode add their arts, wiles, and stratagems to the competition for supremacy. Like the denizens of a rock pool, Middlemarchers mix together in a microcosm of human society that replicates the microcosms of popular natural history texts.

Accordingly, many of the novel's inhabitants are both undeniably remarkable individuals, and also somehow representative of a type or kind (Henry 193-206). From its opening pages the novel encourages readers to compare Dorothea Brooke to Saint Theresa. "[C]ertainly not the last of her kind," Saint Theresa is repeated in Miss Brooke, who is kept from fine action and wider fame only because she finds "no epic life wherein there was a constant unfolding of far-resonate action" (Eliot *Middlemarch* 3). Similarly, Tertius Lydgate compares his ambition to make great medical discoveries despite the opposition of smaller-minded people to Vesalius's similar aspirations. Born with Vesalius' passion and drive, Lydgate nevertheless allows himself to be distracted by small cares and meets a different fate. Meanwhile, the vicar, Mr. Farebrother, is a gentle but precise, incisive observer and natural historian, like country parson Gilbert White; his "original, simple, clear" speech marks him as like both White and also (as Lydgate points out) rural-born Reformation preacher Hugh Latimer (Eliot *Middlemarch* 465). Other characters have less-developed but nevertheless recognizable typologies: Sir James Chettam is the fine country squire, a "blooming Englishman of the red-whiskered type" (Eliot *Middlemarch* 15); artist Will Ladislaw is sometimes Orpheus and sometimes Apollo shaking light from his curly hair (Eliot *Middlemarch* 475, 209; Beer 164-166); Mrs. Vincy is "like a Niobe" who boasts of her children and then is chastened (Eliot *Middlemarch* 151); Edward Casaubon is scholar Isaac Casaubon without the spark of genius (Henry 193-196). Like the population of one of Catlow's water drops, these characters are undeniably distinct and memorably individual, yet they also represent

Figure 12: *Drop IV.* 1851. *Drops of Water; their Marvellous and Beautiful Inhabitants Displayed by the Microscope*, by Agnes Catlow.

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recurrent types. Eliot seems to suggest that insight into their personalities can derive from attention to both their particularity and their participation in a wider typology.

If water is the medium through which Catlow's (and Lewes', and Gosse's, and so many other natural history writers') creatures interact, then stories are the medium for Eliot's characters in *Middlemarch.* Stories about others in the form of gossip connect various members of the community. Gossip narratives arise in a kind of group inductive process, in which various facts and impressions are discussed until consensus is built (Shuttleworth 147-8, 152). As Eliot writes of Lydgate, while he is still "virtually unknown–known merely as a cluster of signs for his neighbours' false suppositions" he is already being "puffed and belauded, envied, ridiculed, counted upon as a tool and fallen in love with" (*Middlemarch* 132-133). She writes of the irrepressible Mrs Cadwallader, "both the farmers and the labourers in the parishes of Freshitt and Tipton would have felt a sad lack of conversation but for the stories about what Mrs Cadwallader said and did" (Eliot *Middlemarch* 48). Narratives persist, as demonstrated by the fact that decades later Middlemarch still believes Rosamond's father "Mr Vincy had descended a little" in marriage to an "innkeeper's daughter" while her aunt "had made a wealthy match" with Mr. Bulstrode, "who, however, as a man not born in the town… was considered to have done well in uniting himself with a real Middlemarch family" (Eliot *Middlemarch* 89).

Because these stories form the medium of knowledge through which characters move, the quality of decisions often depends upon how accurately these stories capture the truth of those involved.[115] Eliot often lets readers listen in on the stories characters tell about themselves and others. Dorothea and Casaubon, Lydgate and Rosamond all make poor matches because they project their own wishes onto a prospective mate. So Dorothea takes Casaubon's cultivated scholarly appearance and manner at (literally) face value, and discovers in Casaubon what she seeks: shortly after meeting she has already "looked deep into the ungauged reservoir of Mr Casaubon's mind, seeing reflected there in vague labyrinthine extension every quality she herself brought" (Eliot *Middlemarch* 22). Throughout their brief courtship, "Dorothea's faith supplied all that Mr Casaubon's words seemed to leave unsaid," while Casaubon believes he sees in Dorothea "an ardent submissive affection" (Eliot *Middlemarch* 46, 58). The dry scholar attempts to "abandon himself to the stream of feeling," and when he meets predictably shallow results, looks for "some deficiency in Dorothea" or "the exaggerations of human tradition" to explain it, unaware of his own failings (Eliot *Middlemarch* 58).[116]

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[115] For instance, how accurate are group observations produced via gossip? That individual and community opinions are often wrong is one of Shuttleworth's apt points. That accuracy takes intentional practice in perspective sharing and awareness of one's own subjectivity is, I think, Eliot's – and it derives in part from natural history participatory writing.

Not dissimilarly, before Rosamond Vincy has even met Lydgate, the much-discussed newcomer to Middlemarch, she has already "woven a little future" for their possible romance (Eliot *Middlemarch* 109). Rosamond does not suspect even that she should try to consider Lydgate's perspective, for in her "romance it was not necessary to imagine much about the inward life of a hero" as long as he is "sufficiently handsome," wealthy, and well-connected (Eliot *Middlemarch* 156). Lydgate, for his side, believes that Rosamond's appearance is all the evidence he needs to know that she has "just the kind of intelligence one would desire in a woman – polished, refined, docile, lending itself to finish in all the delicacies of life” and formed perfectly for wifely helpmate (Eliot *Middlemarch* 153). “Poor Lydgate! or shall I say, Poor Rosamond!” Eliot exclaims; “Each lived in a [mental] world of which the other knew nothing” (*Middlemarch* 155).

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[116] That characters mistake "external form" for inner reality in this way is exactly Shuttleworth's argument (146). Though I agree with Shuttleworth here, and want to make clear that her perceptive analysis has guided my own, I think she loses important nuance in associating awareness of conditional perspective *only* with experimental science, which she opposes to natural history practices on this point. Instead, I argue, Eliot borrows natural history's emphasis on visual study under varying conditions and perspectives precisely as a metaphor for perspective shift.

Miscommunication based on invented stories extends beyond the realm of romance. Fred Vincy has “expectations” from old Peter Featherstone’s will – expectations in which Featherstone enjoys encouraging and disheartening the young man by turns. Yet Fred, who “fancied that he saw to the bottom of his uncle Featherstone’s soul, though in reality half what he saw there was no more than the reflex of his own inclinations,” remains unable to apply himself as long as he counts on the inheritance narrative he and his parents have spun from small signs and hope (Eliot *Middlemarch* 111). This narrative risks disaster for Fred, who as it turns out would have inherited much less than the whole estate under the earlier will, and receives nothing by the will that stands. “The difficult task of knowing another soul is not for young gentlemen” – or perhaps for anyone, Eliot suggests – “ whose consciousness is chiefly made up of their own wishes” (*Middlemarch* 111).

Figure 13: G. B. Sowerby, Sea urchin in natural environment, Plate 7. 1859. *Glaucus; or, The Wonders of the Shore*, by Charles Kingsley.

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Figure 14: G. B. Sowerby**,** sea urchin in diagram, Plate 8. 1859. *Glaucus; or, The Wonders of the Shore,* by Charles Kingsley.

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Microscopists Must Account for Conditions

If Middlemarch is a microcosm of human life, Eliot’s adaptation of microscopical natural history skills in her “study” of it extends beyond metaphorical passages to inform some of her novel’s basic premises. Like the creatures readers meet in natural history texts, her characters are both individuals, and also the product of their environment. To understand them is necessarily to consider both aspects, and to practice metaphorical perspective shifts much like the literal ones that the study of natural history requires.

For example, popular works of Victorian natural history commonly included two sorts of illustrations, often within the same text: one style in which objects are presented isolated against a neutral background, and a second style in which they appear situated together within their natural environment, as part of a community. In this way, illustration conventions seem to replicate the natural history dialectic between the broad and the narrow view of animals under study. Oftentimes the same kind of organism appears in two illustrations, once in an isolated form, and once as a living member of a flourishing community. Thus several examples of “Echinus Miliaris” appear in Kingsley’s Plate 7 (Figure 13) in a natural environment, and again in several forms in Plate 8 (Figure 14), where the reader is directed to “See Plate 7” for more information. Similarly, an anemone labeled “Caryophyllea Smithii” appears in several isolated forms in plate 5 (Figure 15) and again in Plate 6 (Figure 16) in a marine environment with other anemone. The reader encounters the same organism isolated and displayed in several of its characteristic aspects in one plate, and as it presumably might be found in the field in another plate. The illustrations suggest that both sorts of view are necessary for understanding.

Not dissimilarly, Eliot’s novel reproduces what Lydgate calls the “systole and diastole” of intellectual “inquiry,” “continually expanding and shrinking between the whole human horizon and

Figure 15: G. B. Sowerby, Anemone in diagram, Plate 5. 1859. *Glaucus; or, The Wonders of the Shore*, by Charles Kingsley.

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the horizon of an object-glass" (Eliot *Middlemarch* 602, Shuttleworth 149). We often see main characters through the wide lens of local opinion, which can seem monolithic in a place where "sane people did what their neighbours did, so that if any lunatics were at large, one might know and avoid them" (Eliot *Middlemarch* 9, Shuttleworth 152). Thus when readers meet Dorothea, we learn that "she was usually spoken of as being remarkably clever" though "Celia had more common-sense" (Eliot *Middlemarch* 7).[117] Meanwhile their uncle, Mr. Brooke, "was held in this part of the county to have contracted a too rambling habit of mind" (Eliot *Middlemarch* 8). Rosamond Vincy is introduced as "admitted to be the flower of Mrs Lemon's school, the chief school in the county, where the teaching included all that was demanded in the accomplished female" (Eliot *Middlemarch* 89). About Lydgate the newcomer, "There was a general impression… that [he] was not altogether a common country doctor," so "great things [are] expected from him" (Eliot *Middlemarch* 133).

Yet readers also know the private thoughts of various individuals at certain times, particularly when these diverge from public thought. Her constant alteration through perspectives, from various individuals to the "county" or community "view," has the effect of alerting the reader that it is possible to perceive the same events, or the same character, in widely different ways (Shuttleworth 149, 152). For instance, on introducing Lydgate Eliot diverges from her narrative to provide a chapter-long review of Lydgate's past and

Figure 16: G. B. Sowerby, Anemone in natural environment, plate 6. 1859. *Glaucus; or, The Wonders of the Shore*, by Charles Kingsley.

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[117] County opinion is disposed to privilege Celia, for "perhaps no persons then living – certainly none in the neighbourhood of Tipton – would have had a sympathetic understanding for the dreams of a girl whose notions about marriage took their colour entirely from an exalted enthusiasm about the ends of life" and not from the trappings of trousseau and household goods (Eliot *Middlemarch* 26).

current psychology. She begins with a restatement of general Middlemarch opinion, and then contrasts that with Lydgate's private aims, which are largely indifferent to Middlemarch opinion. At another time, she provides the outlines of local opinion of sanctimonious Nicholas Bulstrode – it ranges from prideful satisfaction in his habitual deference to rebellious discomfort under his judgment – and then takes the reader inside Lydgate's private thoughts: the doctor "simply formed an unfavorable opinion of the banker's constitution, and concluded that he had an eager inward life with little enjoyment of tangible things" (*Middlemarch* 116-117). Bulstrode himself comes under Eliot's perceptive gaze, which exposes his habit of excusing his own sins where he would castigate similar faults in others. Thus when "we" as readers "are concerned with looking at Joshua Rigg's sale of his land from Mr Bulstrode's point of view" what we learn is that, whatever other characters might know or believe, Bulstrode himself interprets it as a sign from God in regards to his own business purposes (*Middlemarch* 489). Similarly, readers also often learn what one character privately thinks of another. For example, Celia often submits to Dorothea's opinions, despite her unspoken feeling "that Dorothea was inconsistent;" as Eliot notes, "The younger [sister] had always worn a yoke; but is there any yoked creature without its private opinions" (*Middlemarch* 14).

Often these shifts from one character's mind to another happen subtly, but Eliot several times calls attention to her perspective change. One remarkable moment makes the shift a matter for philosophy. "One morning some weeks after her arrival at Lowick, Dorothea—" Eliot begins, before halting suddenly over the dash: "but why always Dorothea? Was her point of view the only possible one with regard to this marriage? I protest against all our interest, all our effort being given to the young skins that look blooming in spite of trouble," for the ugly and the old have their own richly developed points of view as well (*Middlemarch* 261). The following paragraphs convey Casaubon's thoughts on his marriage, reminding readers that at least two people have intimate private perspectives on the same relationship – a fact that Casaubon himself finds troubling, given his concerns over Dorothea's private opinion of his life's work at this stage.

On the widest level, Eliot repeatedly draws proverbial conclusions from her narrow subject. Lydgate's private thoughts lead her to such a pronouncement: "Our vanities differ as our noses do: all conceit is not the same conceit, but varies in correspondence with the minutiae of mental make in which one of us differs from another" (*Middlemarch* 140). The trouble emerging in Casaubon's union with Dorothea produces a wry comment on cultural prejudice: "Society never made the preposterous demand that a man should think as much about his own qualifications for making a charming girl happy as he thinks of hers for making himself happy. As if a man could choose not only his wife but his wife's husband!" (Eliot *Middlemarch* 262). At another moment, Eliot remarks "how little we know what would make paradise for our neighbours! We judge from our own desires…." (*Middlemarch* 488). This habit of philosophizing in plural, using Middlemarch activity as grounds for broad claims about humanity, is as much a part of Eliot's narrator's voice as her microscopical metaphors.

In the context of natural history, good microscopical practice involves a similarly oscillating attention to individual particularity and situatedness, and to the effect of condition and circumstance. As Gosse writes, "the inexperienced microscopist" especially must remember "not to decide too hastily on the character of a surface or a structure, from one aspect merely. So many are the chances of illusion, that the student should always seek to view his subject in different aspects, and under varying conditions of light, position, &c" (*Evenings* 340). Quekett offers similar instruction that "every new subject should be viewed under all the various conditions" that his guide describes (186). Clearly one reason these texts devote so many pages to the ideal environment for microscopical study, as well as lighting apparatus and lens power, is that any alteration in condition can produce altered vision and interpretation. Yet these writers figure attention to condition as positive, useful training for eye and mind. Lewes writes, "The one reason why, of all sciences, Biology is pre-eminent as a means of culture is, that owing to the great complexity of all the cases it investigates, it familiarizes the mind with the necessity of attending to *all* the conditions, and thus it keeps the mind alert" (*Animal* 95-96). Attention to context in "Biology" alerts the mind to awareness of condition more generally – a necessary quality for cultured thoughtfulness within a Victorian empiricism positing that experience and environment construct even the human self.

For these writers, differences in perception due to differing conditions are not merely irritations to be controlled, even though they may undergird an unwary observer's interpretive mistakes. Instead, the varied vision that varied conditions produce offers one important source of knowledge.[118] Repeatedly, introductory microscopy guides instruct readers to begin with low lens powers and work gradually towards higher powers. "As a general rule," writes Quekett, "it is best to use the low powers first, as a good light and greater clearness of definition, together with a large field of view, will be obtained; the higher powers may be employed when the observer has a good general ideal of the arrangement of the several parts" (182). The observer might even begin with a "pocket-lens" instead of a microscope to begin work (J. Wood 8). Similarly, the observer should ideally look at new specimens under varied lighting conditions, using various implements to change the strength and angle of light and taking advantage of different times of day. As Jabez Hogg advices, "any new or unknown specimen… should be viewed in turns by every description of light direct and oblique, as a transparent object and as an opaque object, with strong and with faint light, with large angular pencils [of light] thrown in all possible directions" (55). The more that various conditions alter perception, the more the observer learns: "Every change will probably develop some new fact in reference to the structure of the object" (Hogg 55).

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[118] Thus the "many levels of analysis of Middlemarch life" that Shuttleworth notes Eliot presents do not derive strictly from "the controlling experimental conception" that depends on conceiving of the narrator as a scientist but inhered also in good naturalist practice (161).

The texts imply that varied conditions can catch the inexperienced observer unawares, resulting in interpretations that are more subjective than truthful. But at the same time, awareness of condition allows the microscopist not just to control for condition but to manipulate it and produce *more* thorough, accurate interpretations. In *Evenings at the Microscope*, Gosse leads his readers through a virtual observation that utilizes this control, in which his words simultaneously instruct readers in what to imagine and what to do to reproduce the observation. Gosse begins with the narration of his specimen preparation, as if the reader watches at his elbow.[119] Then he writes, "First, let us use a low power – one hundred diameters or so – in order to take a general glance at what we have got. Here is an array of life indeed!" (*Evenings* 457). A vivid description of the community that appears in the live-box, and to the reader's imagination, follows. It includes "clear crystal globules," "tiny points… like nimble fleas," "long forms… twisting," "busy little creatures," and an array of other microscopic entities forming “maelstroms in miniature, and tempests in far less than a teapot” (*Evenings* 458).

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[119] "I take up with the tip of a fine tube, or pipette, a minute quantity of water" from the bottom of a phial of pond water, he writes, and "[t]his drop I discharge upon the glass of the live-box," which is a glass box that holds living specimens on the microscope stage (*Evenings* 457).

Then Gosse selects one from among the rich “material for our study,” now of the individual in isolation, and continues, “Let me put on a higher power, and submit it to your observation” (*Evenings* 458). The next sentence directly instructs his reader what to visualize: “You see a flat area of clear jelly, of very irregular form, with sinuosities and jutting points, like the outline of some island in a map” (*Evenings* 458). The description continues, providing a much greater degree of detail than in his previous notice of the creature. Gosse also begins to take time into account. The specimen is an Amoeba diffluens, and as the reader “watches” it changes form – “it is not at two successive moments of exactly the same shape” (Gosse *Evenings* 459). As moments pass Gosse narrates this changing shape in some detail. Though others’ instructions suggest a greater variety of condition, Gosse’s pages demonstrate the basic utility of manipulating microscope and environment to see differently. Attention to condition allows the observer to better understand the object of study.[120]

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[120] In fact, Lewes adapts this practice from microscopy to the perception of humans in their environment that is worth quoting at length:

> At some distance from the Alps we discern their masses of purple grandeur, but that is all we discern; on approaching nearer, these purple masses assume shapes more and more definite, although their varied architecture is still hidden from us: we see none of their ravines and valleys; a little nearer, and we detect these, but discern none of the chalets nestled in the valley, or scattered over the mountain-sides; nearer still, we see the habitations, and the cattle, and the men; yet nearer, and we discriminate individualities; but we have still to advance, and patiently watch, before the tragedies and comedies acted in these scenes can become intelligible to us. Thus with each step we have changed our conceptions of the Alps. Thus with each step do we change our conceptions of Nature. We all begin, where most of us end, with seeing things removed from us—kept distant by ignorance and the still more obscuring screen of familiarity. We then learn to observe something besides these broad general outlines which constitute the scenery of our existence, and learn to admire the magnificence of Nature. The observation of one detail is a step to the recognition of many. In this stage we resemble the traveller who has discovered the Alps to have valleys and habitations. If the Microscope be now placed in our hands, it brings us into the very homes and haunts of Life; and finally, the high creative combining faculty, moving amid these novel observations, reveals something of the great drama which is incessantly enacted in every drop of water, on every inch of earth. Then, and only then, do we realise the mighty

For Eliot to narrate the life in the Middlemarch water drop, then, requires her attention – and ours – to condition as it accounts for character. Mr. Farebrother speaks like a Victorian empiricist when he reminds Dorothea that "character is not cut in marble – it is not something solid and unalterable. It is something living and changing" and can change with the condition (Eliot *Middlemarch* 692). If types – of Saint Theresas, Vesaliuses, Casaubons, Whites of Selborne – appear repeatedly in human history, much depends upon their circumstances, as Eliot also makes clear from the opening words of her novel. Saint Theresa "found her epos in the reform of a religious order" but without a "coherent social faith and order" offering material and métier, her later sisters find " no epic life" (Eliot *Middlemarch* 3). So Dorothea finds herself in a community largely unresponsive to the deeper desires of her nature. One consistent theme of her struggle is her search for proper outlets in an environment often uncongenial, whether because it needs no improvement (e.g. Lowick), because proprieties and family members stand in

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> complexity, the infinite splendour of Nature; then, and only then, do we feel how full of Life, varied, intricate, marvellous, world within world, yet nowhere without space to move, is this single planet, on the crust of which we stand, and look out into shoreless space, peopled by myriads of other planets, larger, if not more wonderful, than ours. (*Sea-Side* 54-55)

Lewes presents the visual approach to the Alps as a gradual process of discernment, which begins with the perception of mere "masses" and ends in patient watching of "the tragedies and comedies" of human life on the mountains. At each degree of approach, something new and useful to interpretation of the whole appears, but it is not until individuals are fully visible, and the observer can watch them over time within the context of their community and environment, that the life of these inhabitants is fully "intelligible." Like Gosse's readers taking time to watch an amoeba, Lewes incorporates time to watch interaction between human inhabitants, their fellows, and the natural environment. Lewes then turns this into a statement about human powers of observation: we begin in incomprehension, the twin obstructions of ignorance and over-familiarity preventing us from seeing clearly even what is closest except in "general outline." To learn to see one detail in "Nature" is to make a beginning from which skill in observation gradually improves; the microscope then opens the "homes and haunts of Life" and displays the inhabitants whose activity together forms "the great drama which is incessantly enacted" even in "every drop of water." To observe this drama, unfolding over time in the tiniest of spaces, is then to feel the full significance of not only this microcosm but also the "world within world" that ultimately forms the whole populous planet whirling through "shoreless space" "peopled" perhaps with even more life. It is to learn to attend to the individual and the community, the personal and the environmental. It is to begin to suspect the splendid mystery of contexts within contexts that expand indefinitely, and yet affect the life of the most infinitesimal creatures in mutually causative fashion. Though Lewes uses the image of an observer watching humans within their community and physical environment to explicate the study of a microscopist who examines "the great drama" of a water drop, his metaphor reversed could serve as a model for Eliot's *Middlemarch*.

her way (e.g. Sir James, "county" opinions about women's work), or because intended recipients are unreceptive (e.g. Casaubon). She finally immerses herself in Ladislaw's public work instead of her own, and her "full nature… spent itself in channels which had no great name on the earth" (Eliot *Middlemarch* 785).

Similarly, while he has just fortune and freedom enough for independence and self-motivated work, Lydgate dreams of making his name and great discoveries in medicine. Even while "the man was still in the making," the mixed character traits, the "virtues and faults capable of shrinking or expanding" that lead to his eventual failure to follow through on his dreams are present: he is prideful, he is sensitive, he has "spots of commonness" that prevent him from turning his scientific precision into a Lewesian alertness about social relations (Eliot *Middlemarch* 140-1). While he has money enough for independence, Lydgate's pride merely makes him seem aloof to his neighbors; his sensitivity and intellectual discernment enables his practice insofar as he is interested even in patients who cannot pay; even his emotional impulsiveness and marriage with Rosamond might not have destroyed his hopes had he maintained her in furniture and dress. Careless of money, his lack of it begins to make Lydgate aware that his success may depend as much on condition as on desire: a "petty degrading care" like want of money "casts the blight of irony over all higher effort" (Eliot *Middlemarch* 551). Pride keeps him from accepting help until it is too late; sensitivity keeps him despairingly careful of "Rosy." Finally mastered by debt and wife, Lydgate turns to a more financially successful career that feels like failure. Would-be Vesalius, entangled in small cares, becomes a conventional "watering-place" doctor to the well-to-do.

Condition shapes the lives of supporting figures too, so that Farebrother must maintain himself "not altogether in the right vocation" (Eliot *Middlemarch* 162) and Fred Vincy narrowly escapes a misfitted life as clergyman partly through a happenstance encounter with Caleb Garth (Eliot *Middlemarch* 561). "It always remains true that if we had been greater, circumstance would have been less strong against us," Eliot writes, and yet individual characters and the fates they meet are never separable from their community and condition (*Middlemarch* 551). Character and biography are shaped in the continual interaction of type and environment, personal qualities and local conditions.

Condition as it affects perceptual possibilities also accounts for how well characters understand each other. I have followed Shuttleworth's argument that Rosamond Vincy, Lydgate, Casaubon, Fred, and Dorothea misunderstand themselves and each other when their viewpoint remains restricted to personal desires and/or is unduly influenced by unsubtle community gossip (168-9). Dorothea's evolution beyond these depends in part on her determination to seek "the fullest truth, the least partial good" (Eliot *Middlemarch* 190). This evolution, which finally produces Dorothea's most selfless act of the novel, shows Eliot again using physical vision metaphorically to represent perspective shift. Eliot has characterized the "country gentry," to whom Dorothea belongs, metaphorically as "dotted apart on their stations up the mountain" from which "they looked down with imperfect discrimination on the belts of thicker life below" (*Middlemarch* 306). Dorothea has never been "at ease in the perspective and chillness of that height" (*Middlemarch* 306). When she finally rises from the "narrow cell of her calamity" on the morning after her worst crisis, her gaze through an upper window of her lonely house literalizes this earlier comparison with a crucial difference (Eliot

Middlemarch 740). Where metaphorical distance once stood for "imperfect" sight, now literal distance facilitates Dorothea's wider vision of herself within a living community:

> She opened her curtains, and looked out towards the bit of road that lay in view, with fields beyond…. On the road there was a man with a bundle on his back and a woman carrying her baby; in the field she could see figures moving – perhaps the shepherd with his dog. Far off in the bending sky was the pearly light; and she felt the largeness of the world and the manifold wakings of men to labour and endurance. She was part of that involuntary, palpitating life, and could neither look out on it from her luxurious shelter as a mere spectator, nor hide her eyes in selfish complaining. (Eliot *Middlemarch* 741)

Though Eliot has shown us Dorothea's gaze through this window many times by these closing chapters, this is the first view that incorporates human life and its effects in the forms of a family, human occupations, fields, a road.[121] It is as though she now sees the view through the proper lens. As a result, Dorothea now *feels* instead of merely desires a connection with "the manifold wakings of men to labour and endurance." Though she has not lacked for idealistic altruism, her opportunities have been severely constrained until this moment in which action seems to require supreme sacrifice. Dorothea now must turn her vision of community into action, dependent on this awakening awareness of herself situated within a field of social connections, perhaps comprehended from an elevated social status but viscerally understood as strongly local ties (Shuttleworth 171). Like a naturalist viewing new horizons, her narrow self-focus expands into awareness of her own situated condition, which crucially enables selfless action.

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[121] By the night of her final crisis, Dorothea has spent much time at windows. On her first visit to what will become her own boudoir at Lowick Grange, Dorothea "turn[s] to the window to admire the view," in which appears "the avenue of limes" that will eventually become her solace in loneliness (Eliot *Middlemarch* 70). When she returns sadder and wiser from her honeymoon in Rome, the furniture of Dorothea's room seems smaller, colder, and fainter, and the view through her window is similarly snowy and cold: "The distant flat shrank in uniform whiteness and low-hanging uniformity of cloud" (Eliot *Middlemarch* 256). As "[t]he duties of her married life, contemplated so great beforehand, seemed to be shrinking with the furniture and the white vapour-walled landscape," so through the window Dorothea sees a "still, white enclosure which made her visible world" (Eliot *Middlemarch* 257). The view through the window is more than an objective correlative reflecting Dorothea's feelings: it seems also to make up part of the environment that actively shapes her activity in a living "nightmare in which every object was withering and shrinking away from her" (Eliot *Middlemarch* 258).

Later, the room and its view take on a more comforting atmosphere, as if they are the physical home of her "inward life;" "She had been so used to struggle for and to find resolve in looking along the avenue towards the arch of western light that the vision itself had gained a communicating power" (Eliot *Middlemarch* 349). Again the view through the window does not merely reflect, but actively influences Dorothea's inward life, which in turn shapes her outward behavior. At the height of her marital misery, however, Dorothea is too preoccupied to look. After the crisis of Casaubon's health, in which he rejects Dorothea's attempt to offer solace, Eliot writes,

> She went up to her boudoir. The open bow-window let in the serene glory of the afternoon lying on the avenue, where the lime-trees cast long shadows. But Dorothea knew nothing of the scene. She threw herself on a chair, not heeding that she was in the dazzling sun-rays: if there were discomfort in that, how could she tell that it was not part of her inward misery? (*Middlemarch* 399)

Thwarted in her attempt to show outward care, Dorothea turns inward so profoundly that her awareness is contracted into inner misery. The communicating power of the view, and even the light and air through the open window, are ignored and absorbed into this nearly pure self-consciousness. Thus when Dorothea rises from the "narrow cell of her calamity" on the morning after the night of her crisis, her gaze through the window echoes multiple other moments with a difference (Eliot *Middlemarch* 740).

Though Dorothea's response may be rare, Eliot does not finally despair over the possibility of careful perspective sharing. As with thorough microscopical observation, it is not innate but acquired, often through hard experience, for "We are all of us born in moral stupidity, taking the world as an udder to feed our supreme selves" and must learn that others too have "an equivalent centre of self, whence the lights and shadows must always fall with a certain difference" (Eliot *Middlemarch* 198). "Suppose we turn from outside estimates of a man," she writes, "to wonder, with keener interest, what is the report of his own consciousness about his doings or capacity" (*Middlemarch* 78). Like the microscopist who directly instructs readers in habits of observation and then leads by example, as a novelist Eliot articulates her intentions and illustrates them. As the microscopists' descriptions teach the reader both to visualize in response to the text, and to reproduce the process in personal experimentation, so Eliot's narration helps her reader better to understand her characters as individuals, and also seems to invite reproduction in that reader's daily activity. Her stories seem to want to teach readers certain observational practices by asking them to *see* how much more accurate interpretive stories about others can be when they incorporate varied perspectives and attention to condition.

Conclusion: Visual Curiosity, Visual Wonder

Victorian natural history writers establish a “community of wonder” among their readers: to learn to see precisely is to learn to see reverently, as naturalist writers’ emotional tone makes clear. Kingsley advocates as much when he asserts that naturalist study improves children by teaching them “to find wonder in every insect, sublimity in every hedgerow, the records of past worlds in every pebble, and boundless fertility upon the barren shore” (54). Lewes writes that persistent observation brings a “deep, abiding, almost awful sense of the mystery and marvel of Nature,” “[t]he crowning glory” of which “is the knowledge which ever opens into newer and newer vistas, quickening our sense of the vastness and complexity of Life” (Lewes *Sea-Side* 53).[122]

A crucial component of this wonder derives from a growing sense of nature’s interconnection, inextricable from practice in sharing perspectives. “Happy, truly, is the naturalist,” writes Charles Kingsley; “[for] everywhere he sees significances, harmonies, laws, chains of cause and effect endlessly interlinked, which draw him out of the narrow sphere of self-interest and self-pleasing, into a pure and wholesome region of solemn joy and wonder” (14). Natural history’s emphasis on shifting from the broad to the narrow view and back, on accounting for condition and circumstance, on precise observation and the attempt to multiply perspectives, helps the naturalist to perceive him- or her*self* within a wider sphere. As Lewes puts it, “We cannot isolate ourselves if we would. The thoughts of others, the needs of others, – these two make up our life; without these we should quickly perish" (*Animal* 180). By teaching naturalists to regard their own interests within a field of competing interests, in which all living beings are connected, natural history improves the very ability to see interconnections on which it depends.

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[122] Later he asserts that “Only ignorance keeps us from perpetual wonderment; as we lift each corner of the veil, more and more marvellous are the vistas which reveal themselves” (*Sea-Side* 236).

In Eliot's hands, this interconnection becomes a tangled plot of hidden connections, in which old secrets return to connect otherwise disparate fates, and surprising effects link characters across social chasms. As she writes, "…anyone watching keenly the stealthy convergence of human lots, sees a slow preparation of effects from one life on another, which tells like a calculated irony on the indifference or the frozen stare with which we look at our unintroduced neighbour" (*Middlemarch* 88). Indifference is nearly always rewarded with pain. On the other hand, social inextricability means that one good turn can have an "incalculably diffusive" effect, "for the growing good of the world is partly dependent on unhistoric acts" of those who do learn to see themselves networked within a wide field (Eliot *Middlemarch* 785). Eliot's novel seeks to build those connections one at a time, as she teaches readers to see and practice perspective shifts in a natural history of human life.

CHAPTER 5: THE COLLECTION AS VISUAL TECHNOLOGY IN RUDYARD KIPLING'S *KIM*

In Rudyard Kipling's captivating vision of India, *Kim*, the eponymous protagonist is the son of a poor Irishwoman and a former color-sergeant of an Irish regiment. Born in India and orphaned soon after, when the novel opens Kim lives in the loose care of an opium-addicted half-caste woman and flits about Lahore on errands of local intrigue. His only link with his British heritage is an amulet containing his birth certificate and his father's Freemason papers; he refuses even to wear European clothes much of the time, but prefers to slip through the streets in "Hindu or Mohammedan garb" (Kipling 51). Known as "Little Friend of all the World" for his varied connections in the city, Kim is intensely curious and puckishly daring – a boy's ideal hero. Curiosity motivates Kim to introduce himself to the lama, a strange figure who appears outside the Lahore Museum one day and represents "such a man as Kim, who thought he knew all castes, had never seen" (Kipling 52). Curiosity sends Kim along as *chela*, or disciple, on the lama's pilgrimage in search of a holy river. While on the road, Kim's heritage and talent draw the attention of British officials. Kim is sent to British school – though he escapes during holidays to travel with the lama–and becomes an agent of British intelligence in "the Great Game" of espionage in India, combining work with play in an adventurous fashion.

Throughout the novel, Kim's continued travel with the lama, as disciple and on the Empire's secret commission, offers Kipling the chance to present wide views of

India. Much of the novel's interest lies in exciting the reader's own Kim-like curiosity about this landscape populated with strange figures and stranger events, a place and population simultaneously part of Great Britain and yet unmistakably foreign. Along with Kim, Kipling clearly delights in his vision of India, and expects his reader to share interest. Such a vision, born of Kipling's own boyhood love for the region, is hard to resist. Yet Kipling sees India through eyes so thoroughly imperialist that *Kim* is as much propaganda for the British Empire as it is adventure story, as Edward Said, Sara Suleri, and others have noted.[123] In fact, scholars suggest even the fantasy of encompassing all India in one novel may belong only to the English outsider-possessor, who can imagine it in panorama through ignorance of local differences (Cronin 5). How did an author so infatuated with India create such an apparently sympathetic vision and yet get it wrong?

One key to the riddle lies in the Great Game as structuring concept. As a term, "the Great Game" refers to the tense struggle for control over the dangerous, uncharted territory between British India and Tzarist Russia in the nineteenth century. It took the form of varied diplomatic and intelligence-gathering missions, as English military officials, amateur researchers, and scientists of various stripes collected information about the people, culture, and geography of the region and attempted to influence local rulers to maintain British allegiance. As a metaphor for espionage, the Great Game suggests a serious, secretive, wittily fatalistic approach to exploration.

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[123] Said points out that Kipling presents a "timeless" India, "a place almost as much poetic as it is actual" not because India was like this but because Kipling "deliberately saw India that way" (134). Suleri notes the sense of novelty the novel reflects is inseparable from the "will to possess" (118-119). Both quote Edmund Wilson's earlier comment that while "the reader tends to expect" that Kim will "realize that he is delivering into bondage to the British invaders those whom he has always considered his own people," Kipling avoids this potential conflict entirely (123-4). Said adds that this potential conflict goes unmentioned "not because Kipling could not face it, but because for Kipling *there was no conflict*;" in Kipling's view "it was India's best destiny to be ruled by England" (Said 146). "In reading Kim today, " writes Said, "we can watch a great artist in a sense blinded by his own insights about India, confusing the realities that he saw with such color and ingenuity, with the notion that they were permanent and essential" (162).

In Kipling's treatment, the term becomes almost literal: the world that Kimball O'Hara inhabits is a fantasy game space, where the deadly work of knowledge gathering occurs in the context of a boy's adventure. Curiosity drives both work and play, just as it must have for British explorers who slogged through difficulty on the strength of a desire to know. Curiosity compels reader interest in the novel's strange and possibly magical events, exotic landscapes, and remarkable people. The Great Game provides rules and adversaries, and the reader vicariously adventures with Kim, rejoices in secret expert knowledge, and seems to scan all India with intense curiosity that the novel itself evokes.

Within this game space, the information that Kim learns to catalogue in service to the Empire is most often visual: he must learn to recognize and remember people by their visual appearance, and to "carry away a picture" of the countryside in his mind (Kipling 211). His training points to British reliance on visual information about their territories, including maps, geographic records, catalogues of people according to visual type, drawings of flora and fauna, and descriptions of landscape. The novel reproduces this reliance on visual information for the reader; Kipling "shows" India through descriptions of visually arresting scenes, catalogues of visually interesting objects, and depictions of people via "characteristic" visual appearances. By the end of the novel, this accumulation of visual experience facilitates the lama's holistic vision of all India – and the reader's. Rich in memorable visual imagery, the novel provides a *collection* of vicarious visual experiences that seem to add up to comprehensive knowledge.

This chapter will consider the dissertation's concern with how fiction involves readers in other lives, performing cultural work along the way, through analysis of the puzzle *Kim* poses: the novel enthralls and misleads the reader because it connects its apparently comprehensive vision of foreign places and people with insight into identity. I argue first that the British used the collection (whether of maps, drawings, photographs, descriptions, or records of ethnic and cultural "types") as a kind of cognitive artifact – one that enhances thinking via visualizations. Collections of knowledge gathered and arranged according to various typologies, in the form of albums, atlases, maps, or museums, allowed Britons to organize visual data, study it for patterns, and communicate knowledge. Collections as visual technologies thus facilitated not only the British government's accumulating knowledge about its growing empire – which in turn informed further imperialist decisions – but also nurtured nationalism in British subjects at home and abroad, in current and future administrators, in researchers of various kinds, and in citizens who merely read books, bought maps, gazed at albums, and visited museums. Britons who participated in this trend participated in imperialism. Curiosity stoked interest, which in turn helped to build the imagined community of empire.[124]

My chapter will then argue that *Kim*, with its register shifts into passages reminiscent of public record, its rich descriptions of landscapes, its detailed catalogues of people according to their visual types, its lists of exotic objects, and its characters' final, apparently all-encompassing visions of India, functions as the novel version of this kind of collection. If books containing maps and photographs were one major form that collections took in the century, then *Kim* is the novel version of such richly visual groupings gathered for inspection, study, and the satisfaction of curiosity. Kipling's own history, including his journalism experience and his connection to museum scholarship through his father, the curator of the very Lahore Museum where *Kim* begins, draws this thread through Kipling's biography as well as his writing. Kipling engages his reader in much the same position as someone studying a map or an album for recreational interest: the satisfaction of curiosity offers both playful pleasure and also work, the accumulation of apparently useful knowledge. Yet Kipling's vision is also undeniably fantasy; the play in which the reader engages does the work of empire as much as sympathy. The Great Game informs the novel's content and its structure and form.

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[124] Although Benedict Anderson's seminal work is concerned with emerging nationalism in developing nations (often themselves former colonies) rather than with nations establishing overseas possessions, his term usefully suggests the possibilities for felt unity among Britons at home and abroad, reading similar material and learning to think of themselves as members (and governors) of a far-flung empire.

This context of fantasy and game clarifies the central problem of interpreting the novel that I have posed – the problem of how such an apparently sympathetic vision could be so inaccurate. *Kim* as fantastic vision highlights fiction's unexpected dangers. We like to share stories, and some scholars argue that reading may offer not only pleasure but also pleasurable *work* in the form of practice in empathy. But it also appears that readers' empathy does not automatically improve morality or sensitivity, and may induce nothing more than self-congratulatory complacency or self-satisfied voyeurism. From the standpoint of Kipling's inextricable loves and biases, fiction comes to seem its own dangerous great game: one that offers pleasure in the work of mindreading and knowledge-gathering, but that also hazards risks of mistake.

Cognitive Artifacts and the Great Game

Nineteenth century Europe was an age of cognitive artifacts aiding information visualization, as well as an age of colonialism.[125] In their immense project tracking the "Milestones" of visualization, Michael Friendly and Daniel J. Denis locate the inception of "modern data graphics" in the first half of the nineteenth century, and call the second half its first "Golden Age."[126] British efforts to consolidate and maintain control over Indian territories occurred amid this atmosphere of innovation, and depended on information gathering. The "Great Game" as Kipling uses the term refers simply to a more intense nineteenth- and early-twentieth-century version of the research the British had carried on in India from as early as the first decade of the eighteenth century.[127]

Whether or not the British actually had an intelligence community of the sort that appears in *Kim*, they were heavily invested in gathering and representing information, often of a visual sort.[128] As anthropologist and scholar of colonialism Bernard S. Cohn has noted, “The British appear in the nineteenth century to have felt most comfortable surveying India from above and at a distance–from a horse, an elephant, a boat, a carriage, or a train” (10). To this list I add the potential for intellectual survey afforded by the maps, drawings, photographs, albums, and catalogues of specimens–or in other words, the collections of (visual) information–that British colonialists gathered during their Indian explorations. The imperial conquest of India ran on the collection of visual knowledge by many different kinds of researchers, from ethnographers, biologists, geographers, cartographers and military surveyors to artists and civilian travelers, collecting a seeming infinitude of details gradually coalescing into massive, messy data sets that facilitated commercial decisions, military action, and political control. Popular publications spread the results of such study beyond government officials to the British public. Beyond practical concerns of daily governance, therefore, such knowledge gathering also facilitated what Phillip Wegner has called the “imaginative ordering” of India, which in turn allowed its conceptual integration into the British Empire (143).

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[125] To review briefly, a cognitive artifact is a human-created device that enhances cognitive performance by representing information. External visualization–representing information so that it can be interpreted visually–is one of the most powerful perceptual avenues for external cognition. Such visual representations might include maps, graphs, and, I argue, physical collections of visually communicative objects. Visual representations reduce demands on memory and thereby free effort for creative thought. They aid discovery by codifying information for new manipulations and grouping it to reveal patterns (Card et al 7, 15). What good visual representations share is facilitation of information collection and storage, pattern recognition, and/or communication. In short, as Card and collaborators put it, they "use perception to amplify cognition" (10). For more on the power of external cognition, see Scaife and Rogers' definitive early article, "External Cognition: How Do Graphical Representations Work?"

[126] It was in Europe in the nineteenth century, for instance, that mapping techniques began to be used to display not just geography but also information about history, culture, economics, medicine, and demographics. Meanwhile, statisticians invented bar and pie charts, line graphs, and time-series plots (Friendly and Denis).

[127] Invention of the term is usually ascribed to Arthur Conolly, a cavalry officer who performed several dangerous missions of the officially unofficial sort, and apparently "coined this memorable phrase in a letter to a friend" (Hopkirk 123). Kipling gets credit for introducing the phrase to the wider British public with *Kim*, published serially in 1900-1901, though Russophobia in direct connection with empire had for the entire previous century been more a matter of intense public feeling than official British foreign policy (Hopkirk 1-8). Scholars now argue over the degree to which the British government had a truly organized secret service in India of the sort Kipling imagines in *Kim*. Regardless of its official existence, in the British popular imagination the idea of "the Great Game" had powerful appeal

This imaginative ordering depended in a significant way on visual collections, which I suggest served as cognitive artifacts for visualization. India seemed ideally knowable via collections because for many Britons, India itself represented an enormous jumble of people and objects and views in need of rational (British) order. As Cohn points out, “[f]or many Europeans India was a vast museum, its countryside filled with ruins, its people representing past ages–biblical, classical, and feudal; it was a source of collectibles and curiosities to fill European museums, botanical gardens, zoos, and country houses" (9). Cohn calls this attitude towards the investigation of India's treasures "the museological modality" (9). Similarly, Christopher Pinney terms the British approach to gathering information about India a "museological mode" which "stressed the discrete and describable nature of India as an aggregate of things which could be understood through strategies of 'typicality'… 'miniaturization'… and, above all, 'display' with its continual assumption of knowledge to be gained through visibility" (255). Whether they studied Indian views, items, or people, British researchers tended to assimilate the objects of their research into categories, which could then be sorted and arranged within collections affording visual survey.

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[128] Often, it seems, the government benefitted from the exploratory efforts of various officials and private citizens operating in strictly non-official capacities with more-or-less secret additional purposes whose outcomes were sometimes excised from subsequent public record and popular publications. See Robert Johnson, *Spying for Empire: The Great Game in Central and South Asia, 1757-1947*, or Peter Hopkirk, *The Great Game: The Struggle for Empire in Central Asia.*

The products of such cataloguing efforts, whether albums of photographs or museum collections on display, would be significant not only insofar as they incited new scholarly and popular knowledge via patterns and visual display. The act of study itself – whether in creation or of the final product – would itself be important for its cognitive influence, because it involves the creator and the user in categorization. Britons creating or learning the categories that organized their collections would learn to perceive their Indian colony and its inhabitants through those defining types. [129]

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[129] Categorization essentially means the categorizer learns to differentiate the kinds or types that constitute the categories. Learning to categorize depends on selecting the "invariants" that define a category, or in other words, the features that all members of a category must invariably share in order to be members of that category. The person who learns and applies categorization uses his or her senses (in this case, vision) to perceive and privilege the relevant feature. Such learning can happen through instruction from another person as well as through personal experience (Harnad 30, 37-9). An album (for example) organized by "type" of view or figure would provide both instruction and practice in learning categories for Indian landscapes or people. Cognitive psychologists have argued over whether categories are innate or learned. But except in the narrow case of Chomsky's proposed inherent capacity for learning grammar, "All evidence suggests that most of our categories are learned" (Harnad 23).

Learning categories in this way could then influence how those who learned them saw and conceived not just of India's objects and images, but also of India the British colony, and its inhabitants. As cognitive scientist Stevan Harnad writes, once categories are learned, in subsequent perception

> Some features are selectively enhanced, while others are suppressed, thereby bringing out the commonalities underlying categories or kinds. This works like a kind of input filter, siphoning out the categories on the basis of their invariant features, and ignoring or reducing the salience of noninvariant features. (34)

In the case of British catalogues, British aesthetic and scientific conventions influence which features were deemed significant, as the many studies exposing sublime or picturesque treatments of Indian landscapes, or empiricist attitudes towards historical and ethnographic work can attest.[130] Collections therefore facilitated external cognition in two ways: as organized groupings affording visual survey, and as the material for practice in categorization. Like *Kim*'s visions of Indian landscapes populated with various character types, both ways offered the fantasy of comprehensive knowledge. Like the Great Game as it forms the novel's space of work and play united in an exotic adventure and packaged for safe enjoyment, these collections harness curiosity for useful pleasure in public, scholar, and government official. Their creation and use could alter how nineteenth-century Britons perceived and conceived of their Indian colony.

Figure 17: Francesco Renaldi, *Muslim Lady with a Hookah*. 1787.
Private Collection.

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The Visual Collection: Types

To early ethnographic and anthropologically minded researchers, India seemed a "living museum of mankind" where physical, visible characteristics "embodied" intrinsic racial identity (Pinney 253). European anthropologists seem to have taken the caste system, if anything, even more seriously than natives as an inflexible biological absolute. Castes seemed strictly endogamous groups in which visible difference indexed racial and cultural difference and genealogical inheritance. Indian people could therefore be sorted into "types" according to visual physiological markers–and in practice, often by dress and the curious implements associated with their traditional occupations as well. Pinney quotes William Flower, British comparative anatomist, thus: "Physical characters are the best, in fact the only true tests of race, that is of real affinity; language, customs etc, may help or give indications, but they are often misleading" (253). Once properly sorted, these "types" should reveal the progression of human history in the form of racial genealogy.

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[130] See Almeida and Gilpin, *Indian Renaissance: British Romantic Art and the Prospect of India,* David Arnold, *The Tropics and the Traveling Gaze: India, Landscape, and Science 1800-1856*, Pinney's essay in *The Raj: India and the British 1600-1947*, or Nicholas B. Dirks, "Guiltless Spoliations: Picturesque Beauty, Colonial Knowledge, and Colin Mackenzie's Survey of India"–for just a small selection.

This typological framework produced many collections of visual images of caste "types" intended for study and for popular interest, sometimes simultaneously. Mildred Archer has demonstrated the huge late-eighteenth and early-nineteenth-century popularity of albums containing drawings of Indian natives and the tools of their occupation among the British, who bought them as souvenirs of India (Cohn 100). These Indian subjects (of the empire and of the drawings) are usually largely "decontextualiz[ed]. They are drawn without any background, and with an individual and perhaps his wife depicted with the tools of his or her trade or the products of goods produced for consumption and use by Europeans and Indians" (Cohn 100). These figures are therefore not individuals so much as representatives of their visual type or kind. British paintings of government ceremonies and official history had also long suggested the

Figure 18: Sir David Wilkie, *General Sir David Baird Discovering the Body of Sultan Tippoo Sahib After Having Captured Seringapatam on the 4th May 1799*. 1839. National Gallery of Scotland, Edinburgh.

Image removed for copyright reasons

arrangement of "the bodies of Indians," characteristic of their caste or type, for "inspection" by British representatives of Empire (Pinney 254). (See Figures 18 and 19.)

The enormous Victorian *People of India* project, the first of its kind to make intensive use of photographs, marks a major milestone in the visual representation of "types" for ethnographic study and public curiosity. Photographic portraits of "types," with titles like "A Hindu Gentleman" or "A Parsee" or "Nautch [Dancing] Girl," were as popular as their precursors in drawing form, and Victorians snapped up the earliest ethnographic work to use photographs, *The Oriental Race and Tribes: Residents and Visitors of Bombay,* in 1863 (Worswick 4-5). Then, personal and governmental interests united in a project sponsored by the Viceroy, Lord Canning, who requested photographs of Indian life and people to complete an album that he and his wife wished to take home with them to England, to "recall to their memories the peculiarities of Indian life" (Watson and Kaye n.p.). The response to this request was so much greater than expected that copies of the photographs sent to the India Office in London became the basis for an eight-volume series entitled *The People of India: A Series of Photographic Illustrations, with Descriptive Letterpress, of the Races and Tribes of Hindustan* (Desmond 36-7). Published between 1868 and 1875, this immense work was the first major

Figure 19: Robert Home, *Lord Cornwallis Receiving the Sons of Tipu Sultan*. 1793-4.
National Army Museum, London.

Image removed for copyright reasons

Figure 20: Object 4: Mullick. 1868. From *The People of India: A Series of Photographic Illustrations, with Descriptive Letterpress, of the Races and Tribes of Hindustan*, edited by J. Forbes Watson and John William Kaye.

Image removed for copyright reasons

ethnographical project to rely so heavily on photography, considered an ideal medium for ethnography because it “so well preserved and conveyed” “the appearance” (Falconer 274).

The People of India includes versions of each of the two varieties of caste “type” images that Pinney identifies (256). It presents both portraits of individuals from the shoulders up, isolated from the background and without accompanying objects, and also staged images of individuals or groups, often with tools, products, or otherwise characteristic objects, in an apparently natural environment. Typically, the portrait or portraits follow an introductory text naming the “type” and describing the people in terms of their geographical location, supposed genealogy, culture, habits, and appearance. Sometimes the same “type” is presented in both portrait styles, as with the “The Mulliks” (Watson and Kaye). The Mulliks are “a distinct race” that reside “chiefly” in Behar and “cultivate land,” according to the introductory information before their photographs (Watson and Kaye). Following these short paragraphs appears the portrait of an older man wearing a turban and beard, his shoulders draped in cloth; it is labeled with his racial, religious, and geographic identity, respectively (“MULLICK. / SOONEE MAHOMEDAN / BEHAR”) but not his name (Watson and Kaye). On the next printed page is a vignette photograph with a similar title (now plural) showing two people outside of what appears to be a hut in an agricultural area. Their clothing, the implements visible around them, and their lifestyle and occupation as it appears in the photograph are on display, indicators of their identity as much as the racial and religious markers of their caption. Other “types” are represented similarly, but usually by either portraits of individuals or of staged groups, and always with generic captions such as “Moamurias, or

Muttucks: Hill Tribe" and "Bhotanese; Chiefly of Tibetan Origin" (Watson and Kaye). The photographs elide identity with appearance and with category or "type."

Typified demographic information also aided the work of British government more directly. When the Government of India began to conduct regular censuses of the population in the second half of the nineteenth century, the categories borrowed terms from ethnography, which had based its terms partly on visible markers. Cohn notes,

> By 1881 [the government] had worked out a set of practices that enabled them not just to list the names of what they hoped would be every person in India but also to collect basic information about age, occupation, caste, religion, literacy, place of birth, and current residence. Upwards of 500,000 people, most of whom were volunteers, were engaged in carrying out the census…. The census represents a model of the Victorian encyclopedic quest for total knowledge.
>
> It is my hypothesis that what was entailed in the construction of the census operations was the creation of social categories by which India was ordered for administrative purposes. (8)

The published reports of the great Censuses of India, collected every decade between 1871 and 1901, did not include graphics or diagrams, but they did participate in the nineteenth-century British rage for statistics with raw data organized in tables (Bowles). This produced the effect of an apparently comprehensive view of Indian culture and society, organized according to geography, population, and markers like religion, caste, occupation, and gender, associated with visual characteristics. This collection of numerical data thus depended on social categories partially recapitulating the many popular visual depictions of Indian "types."

Figure 21: Object 5: Mullicks. 1868. From *The People of India: A Series of Photographic Illustrations, with Descriptive Letterpress, of the Races and Tribes of Hindustan*, edited by J. Forbes Watson and John William Kaye.

Image removed for copyright reasons

Though not directly visual, reams of statistics such as those collected by the censuses could eventually communicate visually. Herbert Hope Risley, the foremost

British anthropologist at the turn of the twentieth century and the Census Commissioner for India, purposefully welded anthropological and governmental concerns even more tightly. Risley inherited and propagated the belief that appearance constitutes identity, arguing for instance that nasal shape indexed racial progress: the “finest noses” belonged to the most superior castes (Risley qtd in Pinney 259). Risley organized the earlier multitude of “types” into seven main categories, and then used census data to produce a color-coded map of India’s population that locates these categories geographically (fig 22). Since caste was associated not just with appearance and occupation but also with the degree of resistance to British rule, the map implies that visual information is key not just to biological identity but also to governance.

Figure 22: *India Ethnology*. 1915. From *The People of India*, by H. H. Risley.

Image removed for copyright reasons

In this way, categories and portrait subjects reinforced specimen-like organization of natives of India by typological markers, defined visually. The resulting collections, whether these took the form of columns of numbers representing types, or in the form of albums of sketched (and later photographic) portraits, offered the sense of encompassing all of India’s subjects inside the boundaries of a book’s covers.

Figure 23: Unknown photographer, *Tamil Dancing Girl.* c. 1870. Cambridge University Museum of Archaeology and Anthropology, Cambridge.

Image removed for copyright reasons

As a collection of characters, Kipling’s novel recapitulates the contents of typical nineteenth-century British albums representing Indian “types.” Kipling’s narrator often identifies people whom Kim and the lama meet on their travels not by their names, but by their appearance and visual attributes, which reveal their identities in the form of caste, occupation, and race. On the train, for instance, the identity of a "fat Hindu money-lender" is evident in his weight, his "oily smirk," and the "account-book in a cloth under his arm" (Kipling 75), while "the wife of a well-to-do cultivator" wears "clinking" bracelets, stereotypically "scowl[s]" at a flirtatious younger woman, and has come equipped with food she can share (Kipling 75-6, 82). On the Grand Trunk Road, where Kim and the lama pass "all the world going and coming," the same identification patterns hold (Kipling 105). For example, the low-caste "Sansis" are obvious because they wear their hair long, carry "baskets of lizards and other unclean foods," and walk "at a quick, furtive job-trot" (Kipling 109). A soldier "Akali" appears in a turban and "the blue-checked clothes of his faith," keeping a stalking pace characteristic of his race (Kipling 109). When Kim helps a fellow spy alter his disguise from "Mahratta" to "Saddhu," he colors the man's skin, adds a "caste-mark" to his forehead, changes his garments, gives him opium to make his eyes red, and, to evade suspicion in a crucial moment, publicly teases him for "hav[ing] lost the ringed fire-tongs which are the Saddhu's distinguishing mark" (Kipling 250-3, 255). Kipling even represents several native characters who play significant roles in Kim's travels by their caste, gender, or occupational identities instead of their names, such as "the old soldier" outside Umballa, who shows them the way to the Grand Trunk Road, and "the woman from Kulu" with whom the lama repeatedly visits, and who nurses both travelers back to health at the novels' end (Kipling 92, 321).

Figure 24: R. E. Wallace, albumen print of Mallah, a "type" from Mirzapur.
c. 1895. Royal Anthropological Institute, London.

Image removed for copyright reasons

These attributes are both concrete and visual, so they should be memorably encoded by both the verbal and nonverbal systems. Although speech also carries clues to identity, visual attributes offer clearly superior identification: a young soldier on the train who speaks of himself as a Sikh is exposed as “Dogra” instead by a fellow passenger, a Sikh himself who knows the visual signs (Kipling 77). Smirks and smiles, clothes and caste-marks, identify groups and individuals within the shifting crowds through which Kim moves to him and to Kipling’s readers. The very strangeness of many of these striking visual characteristics to a curious turn-of-the-century British reader might increase their impact. In this respect, the travelers (and hence, the readers) encounter the populace of India like visual specimens representing “types” in a photographic collection.

Kim’s spy training involves honing his ability to read others’ character by their appearance–in other words, to read types. Having frequently begged, he is naturally skilled “as every beggar must be [in] watching countenances” (Kipling 84). His skill translates into an almost preternatural ability to mimic: for instance, having seen Colonel Creighton once, he mimes the man’s characteristic walk, physical attitudes, and tics so well that an old soldier who knew Creighton years before recognizes who Kim represents even though Kim himself does not know Creighton’s name (Kipling 96). Kim can shift appearances so well that the lama at first believes he has met an Irish boy and a “Hindu urchin in a dirty turban” on the same day, when both are in fact Kim wearing different clothing (Kipling 63-4). Kim fools even Mahbub Ali, who knows him well, into believing the boy is a “Little Hindu” (Kipling 67). As his first nickname “Little Friend of all the World” suggests, Kim is uniquely able to move between the novel’s various social demarcations because he “borrow[s] right- and left-handedly from all the customs”–and the costumes–“of the country he knew and loved” (Kipling 121).

Figure 25: *Khan Mahomed, embroiderer (prize Medallist 1862).* Albumen print by Houghton and Tanner.

Image removed for copyright reasons

Kim's training for the Great Game at Lurgan Sahib's house in Simla hones his skill in visual observation and categorization. Kim and a Hindu child play games of observation and recall, beginning with studying gems and other objects and tallying them from memory. Then they play a similar game with "photographs of natives," presumably like those in *The People of India*, and even "Mr Lurgan's many and various curious visitors," of whom Kim and the Hindu boy "were expected to give a detailed account of all that they had seen and heard–their view of each man's character, as shown in his face, talk, and manner, and their notions of his real errand" (Kipling 206-7). Two of the three important classes of clues–"face, talk, and manner"–are visual. This information, Kipling suggests, will demonstrate true intentions even through disguise.

Kim must also use his growing skill in reading types to improve his ability to embody them. He plays a "game" of "dressing-up," in which Lurgan Sahib paints Kim's face, fits him with various costumes, and teaches him "how such and such a caste talked, or walked, or coughed, or spat, or sneezed" (Kipling 207). Kim's practice in visual memory and his early inclination for imitation predispose him to talent for this "game":

> The Hindu child played this [dressing-up] game clumsily. That little mind, keen as an icicle where tally of jewels was concerned, could not temper itself to enter another's soul; but a demon in Kim woke up and sang with joy as he put on the changing dresses, and changed speech and gesture therewith. (Kipling 207)

It is true that part of Kim's skill in imitation and disguise depends on his ability to channel others' speech as well as their appearances and attitudes. For instance, in another episode he belies his English schoolboy appearance, without changing his clothing, by shifting language and speech convincingly enough to "undeceiv[e]" a native (Kipling 148). Nevertheless his school uniform marks him well enough that Kim cannot escape the physical confines of his school without changing his clothing (Kipling 154). His almost-magical ability to shift identity, defined in this novel by caste, occupation, and race, depends ultimately on adopting visual appearances and characteristic gestures. When Kim "enters another's soul," he inhabits the visible attributes of another "type" with a playful enthusiasm that suits him for the serious work of the Great Game. Kim's training, in which the reader participates vicariously, relies on identification of visual types.

The Visual Collection: Albums of Views

As a subset of their general cataloguing efforts (and often as an aid to mapping work), the British collected and catalogued images as well. William Hodges was the first professional British landscape artist to arrive in India, in 1780. A steady stream of landscape artists followed him over the next century, including Thomas and William Daniell, Henry Salt, James Baillie Fraser, and George Chinnery. The British public was hungry for images of India, and artists recorded views of landscapes, monuments, and archaeological sites that were meant to convey both interest and knowledge (Tillotson 141-145). British surveying efforts were finding important historical and cultural sites that seemed in need of aid to British eyes, even when they were still in use. Archaeologists and other researchers soon followed the surveyors, and landscape art became important as a means for historical record: the British would save the sites for science and preserve the sights on paper for posterity (Dirks 223).

Figure 26: Thomas and William Daniell, *Buddell, Opposite Bilkate in the Mountains of Sirinagur*. 1804. Yale Center for British Art, New Haven, CT.

Image removed for copyright reasons

Figure 27: James Baillie Fraser, *Old Court House Street*. 1819. India Office Collections, British Library, London.

Image removed for copyright reasons

This historical interest combined with general curiosity to create a surprising British demand for financially accessible images of India. Typically, artists would make sketches while they traveled through India over a period of years, return to England and work their drawings up into engravings, and then publish albums or series of prints. As Cohn notes, “There was a large market in Great Britain for illustrated books, portfolios, prints, and drawings of oriental scenes” (9). In addition to the published works of professional artists, amateur sketchers (and later, photographers) crammed their sketchbooks with drawings of Indian views. The government even encouraged those Britons who were abroad for other purposes to fill spare hours with sketching (or later, photographing) and thus continue the work of recording India’s landscapes (Tillotson 149-150, Falconer 267). In short, then, the experience of looking through a collection of views was a regular one in England throughout the nineteenth century.

Though quite a few illustrated books, albums, and prints were published, perhaps the most famous work belongs to Thomas Daniell and his nephew William. Between their arrival in India and return to England almost a decade later, in 1794, Daniell and his nephew traveled widely across the subcontinent–more widely, in fact, than had been possible for any previous traveling English artist, due to recent British military successes. Following in the footsteps of Governor-General Cornwallis, who was subduing Indian lands sometimes just a step ahead of them, the Daniells recorded views across all three Presidencies for the eventual consumption of the British public (Almeida and Gilpin 184). After returning to England, the two labored over a massive publication they titled *Oriental*

Figure 28: Henry Salt, *A View at Lucknow*. 1809. India Office Collections, British Library, London.

Image removed for copyright reasons

Scenery. The work consisted finally of 144 prints published in six volumes over twelve years, and included aquatints based on the Daniells' Indian sketches and writings, which seem to have been aimed at the educated classes in England and India.

A magnificent panorama included within the sixth volume of *Oriental Scenery* (1803) provides a typical example of the Daniells' work. The volume was dedicated to the archaeological excavations at Ellora, an important Hindu temple site. The panorama consisted of three prints that folded out of the book into a single scene stretching 21.5 by 77 inches when fully extended (Rossi). In its topographical accuracy and visual interest, the panorama manifests the competing claims that marked most such British landscape art from India in the late eighteenth and nineteenth centuries (Tillotson 146).

Figure 29: Thomas Daniell, *The Mountain of Ellora*. 1803. The Yale Center for British Art, New Haven, CT.

Image removed for copyright reasons

The panorama demonstrates Thomas Daniell's eye for topographical detail, which he had honed engraving images of estates for the landed elite at home in England. Both Daniells employed observational tools that ensured precision, using a camera obscura to create their composition and a perambulator, usually the instrument of the surveyor or cartographer, to measure distances and frame their scenes accordingly. Frustrated by sketches from previous artists like Hodges, which the Daniells ended up correcting for greater accuracy, the uncle-nephew team created a body of knowledge that was almost as much cartographic as artistic by the standards of the day.[131] This panorama's long perspective and high vantage point, combined with the degree of detail, suggests the possibility of seeing everything–a power that can also imply knowing everything.

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[131] In fact, their sketches became famous for accurate authority long before the final engravings were published to popular artistic acclaim. James Rennell, surveyor-general for the East India Company, even used their sketches to emend his *Map of Hindoostan*, and credited Thomas Daniell for the improved information in the third edition. The final engravings were also praised by London reviewers for their

But, like other landscape images of the period, the panorama also reveals the pressure of the picturesque aesthetic, a necessarily interpretive influence which G. H. R. Tillotson calls “so fundamental a part of the English landscape tradition that to most artists it was not a consciously adopted instrument but an inescapable artistic vision” (151). The picturesque functioned according to a set of conventions clearly apparent in the composition of the Ellora triptych. For example, in order to be picturesque, a scene should be visually interesting; often this meant including “mountains or hills as backdrops, lakes or rivers closer in, and objects such as… ruined buildings” and “gnarled trees” (Dirks 217). Mottled light and shadow should catch and amuse the eye, as it does here. To further “enlive[n]” the scene, “groups of human figures and animals” might be scattered about, to all the better effect if they were a bit tattered and unkempt (Dirks 217). The figures in the panorama, which provide a sense of scale with their tiny size, also offer interest with their Indian dress. The panorama, with its apparently comprehensive view of Ellora, also reflects the ordering vision of the British picturesque aesthetic. As one in an album in a series, it represents a single point in a data field, a slice of visual record in testament to the British vision of India through eyes conditioned by habit.

Figure 30: William Hodges, *A View of the West Side of the Fortress of Chunargarh on the Ganges.* 1785. Wolverhampton Art Gallery, West Midlands, UK.

Image removed for copyright reasons

Photographs mostly superseded landscape paintings and drawings by the final quarter of the nineteenth century. The new medium was much more efficient, and the

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“fidelity of… representations” and “astonishing accuracy” (qtd. in Almeida and Gilpin 191), the volumes becoming known for “provid[ing their] viewers with confidence-inspiring, accurate, masterful, scientific art” (Almeida and Gilpin 191).

East India Company replaced its draftsmen with photographers in 1855. Local British-run governments did the same not long after, desiring archives of military adventures as well as information about landscapes and records of archaeological work (Worswick 2-4). Photography's success can also be measured in terms of firms and societies established. Photographic societies sprang up in Bombay, Bengal, and Madras in the 1850s. Photographic firms had blossomed in larger Indian cities by 1870, catering to the desire of officials and individuals abroad to document Indian people and landscapes. By the late 1860s Samuel Bourne's firm, one of the most famous of its period, offered a 77-page catalogue of photographs for purchase "whose subject matter encompasses the whole British vision of India" in a "comprehensive range of views" (Falconer 266). Amid this encouraging atmosphere, photographic journals and collections flourished, including the Bombay-based *Indian Amateur's Photographic Album* (1856), the London-based *One Hundred Stereoscopic Illustrations of Architecture and Natural History in Western India* (1864), a series of James Fergusson's illustrated architectural volumes (issued 1850s-1870s), and a host of others. London journals frequently brought the efforts of English photographers in India to the public eye; the *Photographic News* commended these photographers in 1859 for preserving images of Indian monuments for study, saving them from "the tooth of time and the razure of oblivion" (Desmond 3). As with their drawing sketchbook precursors, amateur photographers also kept collections of their own work, so that flipping through a series of Indian views remained a regular Victorian experience.

The importance of accuracy and the influence of the picturesque remained competing pressures on photographs, just as they had on drawings of Indian landscapes. The British Raj sponsored official photographic efforts and encouraged the work of amateurs precisely because such records seemed important–and reliable–documentation (Falconer 271). But the picturesque also retained its hold on perception, inescapably shaping the aesthetics of photography in India even after wider trends in English art at home had moved on (Falconer 264-5). Thus photographs like Edmund David Lyon's print of the arcade in the Palace at Madura (1868) or Samuel Bourne's print of Chini and mountains (1866) combine typically picturesque, framed compositions with rugged forms, contrasts in light and dark, and (in Lyon's typical photograph) the appeal of the visually interesting ruin. Others of Samuel Bourne's work add the interest of small human figures to the composition. (See Figures 31 and 32).

Kipling's novel reproduces the effect of a collection of picturesque views: it presents wide-angle views of landscapes, which in their repetition begin to seem like images stacked in an album. Kim's natural curiosity means that from the novel's opening page he takes pleasure both in the interest of what he sees, and also in the information it provides. Though the lama reproves both himself and Kim for becoming overly excited by the visual interest of the Grand Trunk Road, the "wonderful spectacle" of it as "a river of life as nowhere else exists in the world" (Kipling 105), Kim's interested eye remains the lens through which the reader comprehends their travel experience. Kipling describes their first experience with the Grand Trunk Road thus:

Figure 31: Edmund David Lyon, Albumen print of arcade in the Palace at Madura. c. 1868. India Office Library and Records, London.

Image removed for copyright reasons

> The lama, as usual, was deep in meditation, but Kim's bright eyes were open wide. This broad, smiling river of life, he considered, was a vast improvement on the cramped and crowded Lahore streets. There were new people and new sights at every stride – castes he knew and castes that were altogether out of his experience. (109)

And again later:

> The lama never raised his eyes…. But Kim was in the seventh heaven of joy. The Grand Trunk at this point was built on an embankment to guard against winter floods from the foothills, so that one walked, as it were, a little above the country, along a stately corridor, seeing all India spread out to left and right. It was beautiful to behold the many-yoked grain and cotton wagons crawling over the country roads: one could hear their axles, complaining a mile away, coming nearer, till with shouts and yells and bad words they climbed up the steep incline and plunged on to the hard main road, carter reviling carter. It was equally beautiful to watch the people, little clumps of red and blue and pink and white and saffron, turning aside to go to their own villages, dispersing and growing small by twos and threes across the level plain. Kim felt these things, though he could not give tongue to his feelings…. (110-11).

As with the landscape images above, this passage suggests a panoramic view of the countryside, with "all India" spread before Kim (and the reader). The personified wagons "crawl" in the distance and the people are "little clumps" of color moving through the landscape like spots of interest in a picturesque painting. Though sound, and at other points touch and smell, are important for the full sensory experience, picturesque vision functions as the primary sense undergirding Kim's perception in Kipling's treatment. The vision becomes "feelings" for Kim, and perhaps for readers familiar with seeing similar landscape images at second-hand in photographs and drawings.

Similar descriptions of picturesque views often recur. For instance, Kim and the lama have wide views from the train, as "Golden, rose, saffron, and pink, the morning mists smoked away across the flat green levels. All the rich Punjab lay out in the splendour of the keen sun" (Kipling 79). On foot on "the rutted and worn country road that wound across the flat between the great dark-green mango-groves" with "the line of the snow-capped Himalayas faint to the eastward," Kim and the lama see "all India… at work in the fields," the tiny figures of people elided into the

Figure 32: Samuel Bourne, *Chini and its Mountains*. 1866. The British Library, London.

Image removed for copyright reasons

mention of their land (Kipling 99). Kipling describes the road itself with picturesque interest in “the green-arched, shade-flecked length of it, the white breadth speckled with slow-pacing folk” (Kipling 105). This picturesque vision is thus also the reader’s, as if India in this novel becomes a series of visual panoramas speckled with light and spotted with tiny figures.

Kim’s training, as with types, reproduces this visual epistemology in collecting landscapes. His education at St. Xavier’s includes map-making, but this takes a turn towards landscapes as Kipling’s characters explain it. Spymaster Colonel Creighton tells Kim he “must learn how to make pictures of roads and mountains and rivers – to carry these pictures in [his] eye till a suitable time comes to set them upon paper” for government use (Kipling 166). Later Kipling’s text describes this important aspect of espionage work as the conversion of views into mental landscapes: Kim’s job will be to, “by merely marching over a country with a compass and a level and a straight eye, carry away a picture of that country which might be sold for large sums” (Kipling 212). It is as if Kim must do something like the reverse of what the reader does when he or she dual codes Kipling’s visual descriptions: where the reader’s verbal coding of the text produce nonverbal (visual) associations, Kim should compose his visual perception into a “picture” in his mind and then into written descriptions and pictures on paper.

These “pictures” provide knowledge, or at least the sense of it. Like pages in an album, their isolated (though apparently locally comprehensive) views can add up to more than the sum of their parts. Kim’s friend and advisor Mahbub Ali explains that each small player in the game has only local knowledge at any given time: “The Game is so large that one sees but a little at a time” (Kipling 217). Yet the reader, like the spymasters or the owner of an album of views, can turn these pieces into wider knowledge. Several times Kipling provides the reader with a wide view of the game itself in which pieces add up to panorama. For instance, Kim remains ignorant of the outcome of his aid to an agent on the train, but in one quick paragraph Kipling offers a series of “views,” ranging across the map from Simla to Delhi to Roum, of people reacting to the news this agent carried (Kipling 258). Another similar group of “views” reveals to the reader several months’ worth of espionage activity in a series of present-tense vignettes (Kipling 316-318). And finally, the reader has a kind of album in the form of the novel itself, which purports to represent Kim’s sequential, consecutive experience but can always be re-experienced by any reader who returns to earlier moments and previous descriptions in the text.

The Visual Collection: Museums

British explorers in India also collected and catalogued *things*: antiquities, artifacts, art objects, and plant and animal specimens. The public museum, a collection of curious and perhaps educational objects for public view, “came of age” in Europe in the nineteenth century (MacGregor 237). In England, an obsession with rare specimens and interesting objects was at least as old as empiricism, which as Richard Altick points out is not content with legendary authority but requires “materials” for study (10). But it was not until the second half of the nineteenth century that the museum as twenty-first century visitors would recognize it came into being: sponsored by local groups or the government, open for easy public access, intended for educational purposes, and organized and labeled for informative display. In the interim, the private “curiosity cabinet” and the (sometimes traveling) public “show,” both collections of the exotic, the rare, and the strange, served the needs of those who sought visual stimulation and the satisfaction of curiosity via objects.

By the middle of the eighteenth century, England had caught up with Europe in terms of an enthusiasm for personal collections of rare and interesting objects, as the borders of England's territory advanced and the imaginative horizons of its citizens figuratively widened. The advance of industry meant material items were becoming more accessible to the general public, while travelers through Britain's growing empire also continued to supply people at home with odd objects from around the globe. Dealers in "curiosities" served collectors who wanted to stock their cabinets.[132] By 1802, a typical "dealer in all manner of curiosities" trafficked in "Egyptian mummies, Indian implements of war, arrows dipped in the poison of the upas tree, bows, antique shields, helmets, &c…. the skin of the cameleopard exhibited in the Roman amphitheatre, the head of the spear used by king Arthur, and the breech of the first cannon used at the siege of Constantinople" (qtd in Altick 24). In these lists, objects of curious (and dubious) provenance crowd together with oddly manufactured items and exotic things from abroad. Their value lies in their visual interest and their oddity. Similarly, the public exhibition of such jumbled rarities belonging to collectors like the Tradescants or Don Saltero was intended more to astonish and amuse (and sometimes, fleece) the public rather than to educate (Altick 7-8). Still, the very fact of their existence widened the mental horizons of collectors and viewers, who had physical, visible evidence of places as far distant in geography and imagination as Egypt and Constantinople.

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[132] The list of items Horace Walpole bought at an estate sale of such a dealer in 1755 is characteristic. He names his purchases to a friend in a letter: "Brobdingnag combs, old broken pots, pans, and pipkins, a lanthorn of scraped oyster-shells, scimitars, Turkish pipes, Chinese baskets" (qtd in Altick 24). His bill also includes 'two large clumbs [clam shells] with mahogany stands,' 'an India bow, eight arrows, a dagger, etc.,' 'a Chinese lanthorn and an India basket,' 'a basso relievo in ivory and a large comb,' and 'a large and curious crucifix'" (qtd in Altick 24).

Such a collection appears in *Kim*, in the form of Lurgan Sahib's "curiosity shop" in Simla, where the gem-dealer and spymaster has collected a strange assortment of religious and cultural objects. Kipling explicitly connects the place to the more organized public museum in Lahore, but this curiosity shop would also have been familiar to original readers as an example of the older jumbled collections of bizarre curios:

> The Lahore Museum was larger, but here were more wonders – ghost-daggers and prayer-wheels from Tibet; turquoise and raw amber necklaces; green jade bangles; curiously packed incense-sticks in jars crusted over with raw garnets, the devil-masks [from Tibet] and a wall full of peacock-blue draperies; gilt figures of Buddha, and little portable lacquer altars; Russian samovars with turquoises on the lid; egg-shell china sets in quaint octagonal cane boxes; yellow ivory crucifixes – from Japan of all places in the world, so Lurgan Sahib said; carpets in dusty bales, smelling atrociously, pushed back behind torn and rotten screens of geometrical work; Persian water-jugs for the hands after meals; dull copper incense-burners neither Chinese nor Persian, with friezes of fantastic devils running round them; tarnished silver belts that knotted like raw hide; hairpins of jade, ivory, and plasma; arms of all sorts and kinds, and a thousand other oddments were cased, or piled, or merely thrown into the room, leaving a clear space only round the rickety deal table, where Lurgan Sahib worked. (200)

The list is impressive in terms of sheer number of odd objects. As in England's eighteenth- and nineteenth-century curiosity shops or exhibitions of rarities, strange items from distant places crowd together in fascinating disorder. Sacred religious objects and items of daily use in other lands are made strange by their transport into a foreign life. Kipling's descriptions are concretely visual: readers can imagine riotous color in gemstones and "green jade," "peacock-blue draperies," lacquered wood, "egg-shell china," "yellow ivory," "copper" and "tarnished silver." Visually interesting textures abound in gilt and lacquer and cane and cloth, screens and friezes and knots. Dual Coding Theory suggests that this jumble should be especially vivid and memorable, bringing to bear readers' associations with the places named as well as the sorts of objects and the kind of collection Kipling describes. Together the objects represent pan-Asian detritus stretching as far away as Russia and Japan; they suggest a world collected into a room.

By the second half of the nineteenth century in England, publically accessible collections sought to provide "rational amusement," educating the public via entertainment (Altick 3). What remained the same was the mixing of social classes that tended to occur at public exhibitions; as Altick writes, "Curiosity was a great leveler" (3). The nineteenth century saw the establishment of hundreds of British museums, and some of England's most famous, including the National Gallery of Art (1824), the National Portrait Gallery (1856), and the Victoria and Albert Museum (1852). Where earlier exhibitions offered an eclectic jumble, these institutions often specialized, so that museums now focused on antiquities, science, design, art, natural history, geology, and the like. For instance, the nation boasted about 250 museums dedicated to natural history by the end of the century (MacGregor 258). Joseph Banks' collection in Soho Square was the forerunner to this later nineteenth-century museum, which was organized, catalogued, labeled, and intended specifically to provide useful information about (sometimes distant) places and peoples, as well as to entertain and astonish.[133]

Once situated within the confines of the museum, such objects received narrative contexts explaining their functions and situating them within the history of foreign places as the British constructed it (K. Arnold 5-6, Cohn 80). Classified, organized, studied, and explained, these objects still constitute the visual record of empire. The museum collection context provides an "apparatus with which to isolate and investigate bits of the material world" and then return those bits to their categories to complete the view (K. Arnold 5-6, 29).[134] Like the book of photographs writ large, the museum categorizes information for survey – for the satisfaction of curiosity under the cover of education.

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[133] Collections from India appeared in these museums, and made a significant contribution to the temporary Great Exhibition as well. The Indian Museum and Exhibition in London claimed museum status, but was really more an eclectic grouping of objects from India intended to sell tickets. But the East India Company itself ran a better-organized museum that covered cultural and religious objects, agricultural implements, weaponry, and natural history; by 1850 it boasted more than 40,000 visitors a year. This collection would eventually become a treasured component of the Victoria and Albert's holdings (Altick 457, 427, 299-300). Additionally, individual collectors working in the eighteenth and nineteenth centuries were responsible for gathering much of what would constitute the holdings of later British institutional museums set up in Britain and in India (Cohn 9-10, 97).

This form of museum appears in *Kim* as well. The "Wonder House," the "native" name for the Lahore Museum (Kipling 49) where we first meet both Kim and the lama, holds collections of "Indian arts and manufactures," as was typical of imperial museums archiving unusual colonial products (Kipling 52, K. Arnold 109-110, 165). The Curator, a character probably based on Kipling's own father, is "a white-bearded Englishman" who says he is "here… to gather knowledge" and to distribute it, for "anybody who sought wisdom could ask the Curator to explain" (Kipling 55, 52). Kipling's use of "wisdom" apparently covers both scholarly knowledge of Indian culture, and the more spiritual insight the word implies. The visitors to the museum include the Indians themselves, who come to learn about their own culture from the British intruders: Kipling describes "the peasants from the country" who visit "to view the things that men made in their own province and elsewhere" (52). The most important visitor the reader sees is of course the lama, whose visit's purpose in spiritual devotion is the obverse of the Curator's scholarly interest in the museum's images of the Buddha. Thus the Wonder House facilitates at least three sorts of wonder, that response uniting aesthetic pleasure with intent curiosity: the interest of the Indian "peasant" villagers, the scholarly curiosity of the Curator, who discovers with great excitement that the lama can create "conventional brush-pen Buddhist pictures," and the spiritual marveling of the lama, who reacts with emotion and many questions to the museum's Buddhist art (Kipling 60).[135]

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[134] Indeed, here these objects offered (and offer) not just visual knowledge, but a kind of psychological frisson dependent (as are all objects in any museum) on the injunction to "look but don't touch." As Ken Arnold notes, "Being able to get hold of things in museums would in fact be a banal letdown. For touching the essence of an idea, a memory, a moment or a feeling would almost inevitably make it disappear…. Channelled through imaginative exhibitions, played off against the context of the museum, animated by reflexive texts that enable visitors to insert themselves and what *they* know, it is the tightly-sprung energy of objects close enough to touch, but crucially just out-of-reach, that fuels the poignancy of the tales told about and through museum objects" (100-101).

If the reader is at all sympathetic to these reactions, then Kipling's descriptions of the Wonder House's contents can facilitate a kind of wonder in the reader as well. The museum is indeed full of cultural and religious objects, which the Curator studies lovingly and to which the lama reacts "with the reverence of a devotee and the appreciative instinct of a craftsman" (Kipling 56):

> In the entrance-hall stood the larger figures of the Greco-Buddhist sculptures done, savants know how long since, by forgotten workmen whose hands were feeling, and not unskilfully, for the mysteriously transmitted Grecian touch. There were hundreds of pieces, friezes of figures in relief, fragments of statues and slabs crowded with figures that had encrusted the brick walls of the Buddhist *stupas* and *viharas* of the North Country and now, dug up and labelled, made the pride of the Museum. (Kipling 54)

When the lama tells the Curator about his lamassery, a "four months' march away," the Curator brings out "a huge book of photos" in which he shows the astonished lama an image of "that very place, perched on its crag" (Kipling 55). The lama goes over the stone sculptures in the museum, following the story they tell of the Buddha's life; and "Where the sequence failed… the Curator supplied it from his mound of books–French and German, with photographs and reproductions" (Kipling 56). The two men look at a map of Asia – "a mighty map, spotted and traced with yellow" – on which the Curator points out the places important to the Buddha's life. As the Curator speaks, "The brown finger followed the Curator's pencil from point to point" (Kipling 56-57). The Curator, with his mastery of European languages and Urdu, also translates fragments from his archive of books for the lama, who calls him a "Fountain of Wisdom" (Kipling 56-7). The Curator as guide through collected European knowledge of the lama's own religion, and the collection itself to which he literally and figuratively points, seems intended to symbolize British (as foremost European country) epistemological hegemony.[136]

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[135] Indeed, the lama and the Curator each find a version of himself in the other: the Curator recognizes "that his guest was no mere bead-telling mendicant, but a scholar of parts" and the lama refers to their interaction as between "priest and priest" (Kipling 56, 60).

Kipling's text also at times reproduces the language of recorded or institutional text. After covering Kim's genealogy and explaining the boy's relationship with the half-caste woman who cares for him, Kipling shifts into language reminiscent of legend: "So it came about after [Kim's] father's death," Kipling writes, "that the woman sewed [his father's papers] into a leather amulet-case which she strung around Kim's neck" as a token of prophecy (50). Later, he seems to confirm the truth of the lama's wide travels with a parenthetical aside: "(The Curator [of the Wonder House] has still in his possession a most marvellous account of his wanderings and meditations)" (213).

But the most explicit and important of such moments occurs when Kipling reviews Kim's progress at school, and again uses language that suggests legend or institutional text. "It is written in the books of St Xavier's in Partibus," Kipling begins, before recapitulating Kim's study and performance, further detailing his proficiencies thus: "It is further recorded in the same books that he showed a great aptitude for mathematical studies as well as map-making" (212). As if readers pore over the records at Kipling's shoulder, he adds that "Pencil notes on the edge of an old muster-roll record that [Kim] was punished several times for 'conversing with improper persons', and it seems that he was once sentenced to heavy pains for ‘absenting himself for a day in the company of a street beggar’” (212). This records Kim’s continued intercourse with Mahbub Ali and the lama. Finally, the record ends when Kim is fifteen: “His name does not appear in the year’s batch of those who entered for the subordinate Survey of India, but against it stand the words ‘removed on appointment’” (Kipling 212). Like a researcher who discovers records that corroborate other information, the reader knows these words appear to be the institutional proof that Kim attended school and left on secret purposes, documented only telegraphically in official papers.

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[136] Critics have seen the Curator's gift of his spectacles to the lama as a kind of metaphor for the way the Curator becomes the lens through which the holy man sees his own religion during his visit to the Wonder House. See for instance M. Daphne Kutzer, "Kipling's Rules of the Game."

Kipling thus provides the reader with richly concrete descriptions of two major collections of visually interesting objects, recapitulating in words the museum experience. His text further offers glimpses of seemingly official records that authenticate the events it relates, even as they confirm the secret status of the Great Game itself. This language of record itself causes wonder, apparently sanctified by age and former importance, and may increase readers’ curiosity about and belief in the story. *Kim* reproduces the sensation of knowledge through the collection of objects.

The Visual Collection: Maps

Finally, of course, the British produced countless maps of their territory for public consumption and practical use. Early maps tended to focus on safe routes of passage, and reflected the fact that mapmakers “follow[ed] the course of rivers, roads, or mountain ranges, and us[ed] bearings to remarkable rock formations, peaks, or permanent structures as the bases for their maps” (Barrow 64). These maps included illustrations in cartouches and sometimes left out unstudied areas; especially in comparison to later maps these early efforts seem “rambling” and picturesque, with a “journey-like quality that leads a viewer from a starting point to a destination" (Barrow 64). By contrast, beginning in the early nineteenth century, cartographers began to situate geography within latitude and longitude lines. Surveyors' use of trigonometry offered a more consistent, accurate method for locating points in space. Where early maps were often artistically inaccurate, nineteenth-century maps were increasingly "systematic" and objective (Barrow 64-5). The immense Survey of India, a mapping effort that the East India Company began in 1765 and that continued into the twentieth century, "eventually covered India with an imaginary grid on which the government could locate any site" in the continent (Cohn 7).

Even the most apparently objective map offers a particular mode of perception, reflecting and influencing how the mind sees a landscape. Increasingly rationalized, scientific British maps reflected the British preference for order and objectivity, and also the British desire for physical oversight to aid government (Barrow 7). They suggest that visual knowledge facilitates rule. But they also implicitly argue that the British were naturally suited to rule through their rational superiority, which could impose visual and governmental order (Edney 36). The Survey of India sought to show the Indian subcontinent, with all its local differences, as one perceptual–and conceptual–entity, united under British rule (Edney 3-16).

Of course, any map was the collection and distillation of multitudinous intense local efforts. Surveyors were often accompanied or followed by researchers into local zoology, anthropology, geology, botany, history, culture, and demographics (Cohn 7). Surveyors filled journals with sketches and drawings and notes to aid their later cartographic maps, and sometimes also kept personal books of images or notes while engaged on their official business (Barrow 71, 78, Falconer 270-273). Any Survey of

India map, therefore–whether of the earlier journey-like or the later rationalized variety–represents the widest view of a collection of individual views.

The novel's descriptions of the lama's travels offer the reader a totalizing yet particularized perspective on India not unlike the Survey of India's great maps. The lama mistrusts information obtained through his senses, and seeks the holy river of the Buddha precisely because he seeks to be free of Illusion, which he associates with mere appearances. Yet, practically speaking, his quest requires him to walk and look. And when he believes he has found the river and immersed himself in it, he explains his metaphysical, mystical vision largely with concretely visual references:

> Yea, my Soul went free, and, wheeling like an eagle, saw indeed that there was no Teshoo Lama nor any other soul. As a drop draws to water, so my Soul drew near to the Great Soul which is beyond all things. At that point, exalted in contemplation, I saw all Hind, from Ceylon in the sea to the Hills, and my own Painted Rocks at Such-zen; I saw every camp and village, to the least, where we have ever rested. I saw them at one time and in one place; for they were within the Soul. By this I knew the Soul had passed beyond the illusion of Time and Space and of Things. By this I knew that I was free. I saw thee lying in thy cot, and I saw thee falling downhill under the idolater – at one time, in one place, in my Soul, which, as I say, had touched the Great Soul. Also I saw the stupid body of Teshoo Lama lying down, and the *hakim* from Dacca kneeled beside, shouting in its ear. Then my Soul was all alone, and I saw nothing, for I was all things, having reached the Great Soul…. Then a voice cried: 'What shall come to the boy if thou art dead?' and I was shaken back and forth in myself with pity for thee; and I said: 'I will return to my chela, lest he miss the Way.' …. Then a voice cried: 'The River! Take heed to the River!' and I looked down upon all the world, which was as I had seen it before – one in time, one in place – and I saw plainly the River of the Arrow at my feet…. I saw the River below me – the River of the Arrow – and, descending, the waters of it closed over me; and behold I was again in the body of Teshoo Lama, but free from sin, and the *hakim* from Dacca bore up my head in the waters of the River. It is here! It is behind the mango-tope here – even here! (Kipling 337-8)

The lama references specific events from his travels with Kim, alerting the reader to the fact that if the vision he now narrates functions as a holistic vision of all of India simultaneously, this vision is possible because the lama has in fact *seen* so much of India.

In addition to his travels with Kim on the Grand Trunk Road and into the Hill Country, the lama has crossed India extensively on his own. As if his rest stations are nodes on a network, the lama returns regularly to stay in a temple at Benares, or with the woman from Kulu, arriving sometimes "from the South… whence the wonderful fire-boats go to Ceylon," sometimes "from the wet green West and the thousand cotton-factory chimneys that ring Bombay," and "once from the North" where he revisited the Wonder House at Lahore (Kipling 213-14). Having seen these places in person, the lama can reconstitute them in a single holistic vision, like a cartographer using notes and sketches taken on the spot to create a single comprehensive map.

As Said notes, then, the lama's "encyclopedic vision of freedom" is surprisingly like the practical empiricism of "Colonel Creighton's Indian Survey, in which every camp and village is duly noted" (142-3). Kipling's previous narration of the lama's travels suggests his walks encompass much of India indeed. His metaphysical vision offers a holistic version of the British attempt to build an all-encompassing picture of India from a multitude of fragments; the lama himself has sewn together his variegated visual exposures to experience them as one integrated whole. The reader who, prepared by Kipling's description of the lama's experience, visualizes the lama's vision takes the perspective of one who surveys from above, like Colonel Creighton poring over a map.

This vision of the lama, however, is not the rational and objective vision of a nineteenth-century British surveyor, and Kipling seems to leave the choice to interpret it from a mystical or rational standpoint up to the reader. The text provides an alternative version of the story the lama relates about his experience that offers a pragmatic explanation. This version comes in the words of Hurree Babu, a Bengali ethnographer and figure of fun in Kipling's treatment, who has adopted some English research habits but retained some Indian habits of mind. The reader gets the Babu's story first, when Hurree describes to Kim how he saved the lama from drowning. Kim has heard from his caretaker, the woman of Kulu, that while he was ill and in bed the Babu "had the sense to fish the Holy One [the lama] out of the brook" (Kipling 327). Kim asks the Babu for his own explanation, and Hurree replies:

> "Oah yess. I am his good friend, I tell you. He was behaving very strange… I followed him on his meditations, and to discuss ethnological points also…. By Jove, O'Hara, do you know, he is afflicted with infirmity of fits. Yess, I tell you. Cataleptic, too, if not also epileptic. I found him in such a state under a tree *in articulo mortem*, and he jumped up and walked into a brook and he was nearly drowned but for me. I pulled him out."
> "Because I was not there!" said Kim. "He might have died."
> "Yes, he might have died, but he is dry now, and asserts he has undergone transfiguration." The Babu tapped his forehead knowingly. "I took notes of his statements for Royal Society – *in posse*." (Kipling 328-9)

Here then is the practical explanation, in Hurree's professional opinion combining his Western learning with his native accent. The lama has had a fit–perhaps one that medicine can diagnose. While under its influence, he wandered into an actual river. The Babu saved him from drowning while in the throws of this temporary brain dysfunction, and has now recorded it as an example of native culture for the Royal Society. The episode is catalogued within the empire's epistemology. The reader is also thus enabled later to interpret the lama's own words, quoted in the previous section, by imagining details the Babu's story suggests: whatever caused the fit, the holy river is an actual river into which the lama stumbled while under its influence. The lama's version indicates that he is aware, whether mystically or through physical sensation, that the Babu both spoke to him while he was physically incapacitated and also pulled him from the water. Because Kipling does not overtly contrast the Babu's story with the lama's, however, the reader must do that work. We are left to imagine whether the lama has also heard a mystical “voice” admonishing him to remember Kim and to “Take heed to the River!” or has simply given the Babu’s practically motivated warnings metaphysical import. The lama’s holistic vision of India and his subsequent discovery of the sought-after river may be the work of mysticism, or just the pragmatic result of a dream that stitched together discrete previous visual experiences with a stumble into physical water. That the reader can choose highlights the work curiosity performs in the context of this novel.

The Great Game as Fantasy Space in Fiction

If Kipling positions his reader in much the same position as someone studying an album or visiting a museum, nevertheless the information his novel provides is often fantasy masquerading as fact. The Great Game provides not just the novel’s context, but also a space for this fantasy – a space where ludic rules hold sway. As in Johan Huizinga’s description of game space, the Great Game represents a “stepping out of ‘real’ life” into a secluded sphere where an “absolute and peculiar order reigns” (Huizinga 8-10). Kipling’s game likewise “operates self-consciously outside the established law in its own realm of reality” (Hooper 107). Kim and his fellow agents flirt dangerously with boundaries of English control when they gather information on the activities of Russians or rebellious Indians. Otherwise they inhabit the same spaces as other Indian and Anglo-Indian subjects, but pursue their own secret purposes outside the laws of governing institutions, as becomes clear when Kim evades the British police to aid a mission from a higher imperial authority, or, when his training is complete, leaves the British school without a record except for the words “removed on appointment” (Kipling 212).

Just as the novel both presents collections and reproduces them in the reader's experience, so it presents the Great Game and represents one. The Great Game as a metaphor structuring Kim's espionage activity highlights the nature of the pursuit of knowledge that characterizes both the Great Game, and more importantly, also the idea of the collection as manifested in the novel. Knowledge collections in *Kim* facilitate wonder, that blend of pleasure and curiosity motivating study that I have been ascribing to real world British collections.

Philip Fisher usefully describes this sort of experience as "a combination of passion and energy, intellectual alertness and pleasure in the unknown that [leads] on to science;" he finds a synonym for such curiosity in "wonder" (39). A feeling at the "border between sensation and thought, between aesthetics and science" (6), for Fisher, the word "wonder" itself "preserves the connection between intellectual curiosity ('I wonder if…') and the pleasure of amazement" reflected in exclamation "('What a wonder!')" (Fisher 11). It occurs with the notice of something unexpected, unusual, or surprising – a break in the pattern – which prompts not fear but interest. Both the initial interest and the subsequent investigation are pleasurable, and repeated successful experience with investigation and explanation builds a foundation of confidence that allows interest to replace fear in increasingly unusual situations (Fisher 48-9).[137]

Fisher's description of this process of investigation and reintegration echoes Ken Arnold's comment on the work scholars perform with collections. "Wonder, curiosity, and successful explanation," writes Fisher, "notice the world and then renormalize that world, by fitting the exceptional back into the fabric of the ordinary" once the exceptional has been studied (48). Similarly, someone using a collection examines the unusual and the surprising in order not just to better understand these items but also to fit them within the patterns of the whole under survey. Curiosity sparks interest, and pleasure then both accompanies and motivates the work of investigation. The process involves learning and the result is knowledge.[138]

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[137] Wonder results from the instantaneous visual apprehension of something out of the ordinary; the pleasure of this sensation uniting aesthetic appreciation with curiosity propels investigation (Fisher 17-18). **Vision is key,** as Fisher asserts: "Wonder is the outcome of the fact that we see the world. Only the visual is instantaneous, the entire object and all its details present at once" (17).

The collection as I have defined it offers just this sort of pleasurable work experience, which provokes attention to pattern and detail; the fantasy of knowledge the collection facilitates depends in part on a wonder-ful reaction in its viewer. [139] *Kim*, as an adventure full of wonders, elicits curiosity in the reader–a curiosity that is both fueled by and fuels the visual epistemology of the novel as it recapitulates the idea of the collection. Like the collection, where serious pursuit of knowledge and playful interest in the unusual collide, *Kim* points out that curiosity can be simultaneously ludic and serious, wonderful and dangerous. The confines of the novel guarantee the reader safety while its rich and curious catalogues offer vicarious adventure.

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[138] Cognitive psychology studies what Fisher calls wonder or curiosity as exploratory or novelty seeking behavior. According to this level of explanation, humans like all other animals investigate the novel and the unfamiliar, perhaps because more information means better preparedness for the unexpected (Pisula 59-60). The experience of novelty offers pleasure in and of itself, in addition to the rewards of new information. As one psychologist puts it, "The tendency to detect, recognize, and seek novelty must be regarded as a fundamental motivational process regulating the behavior of animals and men" (Pisula 101). In Fisher's terms, both the initial wondering curiosity and the subsequent information that investigation affords are pleasurable. Curiosity can seem to be a sort of biological default, with a novel stimulus always provoking interest. In humans, "exploratory behavior" includes sophisticated intellection as well as observation, manipulation and physical movement; we recognize a gap in our knowledge and feel compelled to fill it. As with lower animals, humans who feel confident in their ability to learn from exploration will seek to satisfy curiosity that novelty arouses; humans who feel "the demands of the situation are excessive" or dangerous will retreat instead (Pisula 72, 131). Translated into humanities terms, this begins to look like Fisher's formulation: something new and surprising elicits curiosity and investigation when context and previous experience suggest safe exploration. Both curiosity and investigation are rewarding.

[139] Though I am calling pleasurable experiences "play" here, it should be noted that play and exploration as they are understood psychologically are similar but not necessarily the same behaviors. They may both be rewarding, and sometimes for similar reasons, but should not be conflated (Pisula 57-65).

I have argued that collections functioned as ordered spaces of catalogued knowledge represented (often visually) within the confines of their boundaries. These boundaries, as if reflecting the organizational as well as the research powers of their creators, offered the sense of knowledge expanding far beyond their confines. Britain's collections of India gave users (the illusion of) the power to understand India holistically via limited yet comprehensive data. In their very scientific, empirical prowess, therefore, they offer a fantasy whose gears are turned by curiosity.

Conclusion: Fiction as the Game

Fiction itself might be compared to a game in which an "absolute and peculiar order reigns," and readers set aside their awareness of reality and their defenses against trickery to participate. There is some evidence that fiction does generally offer a safe space for curiosity to lead readers into the pleasurable work of perspective-sharing. In Suzanne Keen's work with undergraduates, students were much more likely to feel empathy for the protagonist of a novel than for the writer of a purportedly non-fictional letter asking for help. Keen speculates that a fictional context may open the floodgates of emotion in uniquely unguarded ways: readers who know that what they read is fiction abandon the skepticism that protects them from emotional manipulation, and experiment more freely with sharing another's perspective (Keen 29-35). Similarly, the fictional nature of Kipling's novel might also predispose readers to share the perspectives of his protagonists more freely than they might with real life versions. The context of fiction allows the safe satisfaction of readerly curiosity about others.

The content of this novel, exotic to Western eyes especially of its day, may offer a uniquely interesting satisfaction of curiosity within the context of fiction. Kipling permits the possibility of magical causation for strange events like the lama's vision, even as he suggests practical explanations. For instance, when Kim and the lama encounter a snake near the bank of a little stream, Kim hastily warns the lama and looks for a way to kill it, for "No native training can quench the white man's horror of the Serpent" (Kipling 91). But the lama stops him, reminds him that the snake is a soul "upon the Wheel as we are," crosses "within a foot of the cobra's poised head," and commands Kim to follow, saying "Come. He does no hurt" (Kipling 91-92). Kim follows, and "the snake, indeed, made no sign" (Kipling 92). Does the lama's religious awareness guarantee they are safe, or is this lucky naïveté? Kipling does not comment.

Lurgan Sahib's attempt at mind control over Kim, when he compels him to see a broken vessel as whole merely via verbal commands, remains arguably the most inexplicable "magic" of all. Kim seems largely under Lurgan's spell, and begins to see the vessel shimmer back into completion as the older man commands – but then he thinks suddenly of "the multiplication table in English" and this clarifies his vision:

> The jar had been smashed – yess [sic], smashed – not the native word, he would not think of that – but smashed – into fifty pieces, and twice three was six, and thrice three was nine, and four times three was twelve. He clung desperately to the repetition. The shadow-outline of the jar cleared like a mist after rubbing eyes (Kipling 202)

With his recourse to his British self – to English language and rational systems – Kim reasserts his own power of sight and rational intellect. But at the same time, the novel's refusal of any practical explanation for Lurgan's near-success reminds the reader that Kipling asserts few clear boundaries separating rational from mystical explanations.

The boundaries of a novel may allow Western readers unique permission to entertain its exotic contents in this respect, too. Since the "scientific revolution" in the

West, magical thinking and behavior have been relegated to the domain of children and the pre-scientific, as the survivors of past ages (Subbotsky 12-14). But studies show that while children in developed countries do gradually substitute scientific explanations for mind-over-matter magical ones to explain mysterious events, their belief in magic is repressed rather than expunged. Indeed, while Piaget and other child developmental psychologists have seen magical thinking as "an immature stage in the development of intelligence," more recent studies suggest that magical thinking serves a useful cognitive purpose even in adults, aiding creativity and problem-solving (Subbotsky 34, 42).

This may help to explain why art with magical causation maintains such appeal across the age spectrum. While adults with scientific education are much more wedded to verbal disbelief in magic, preferring physical explanations for counterintuitive events, they nevertheless behave as if magical thinking persists on an unconscious level. This is true to *an equal extent* of adults from rural areas in undeveloped countries, *and* of adults from developed countries with a standard scientific education. Furthermore, adults given the chance to explore the possibility of magical causation in a low-cost situation, wherein the researcher reassures them that he understood they disavow magic in favor of science, overwhelmingly demonstrate curiosity about magic (Subbotsky 59, 63-76).

Kipling's novel thus offers a safe space for the satisfaction of curiosity in more ways than one. *Kim*'s rich catalogues, romance of the exotic, and possibility of magic combine to produce the sense of "a 'great and wonderful land'" that also has "the special quality of a den, a secret place in which a child's fantasy life can flourish safely, protected from the destructive realism of adult eyes" (Cronin 7). Kim himself is one model for the reader within the fantasy, for his serious play reproduces what fiction readers do: inhabit other perspectives, interpret characters from limited descriptions, and turn curiosity into information. The novel both elicits and also seems to satisfy this curiosity with its catalogues, replicating the experience of a visual collection. Its pages offer the landscapes of a nineteenth-century photographic album, the visual detail of character "type" studies, the catalogues of a Victorian museum, and the encompassing vision of a Survey of India map. Part of the fantasy it offers is the same dream of comprehensive knowledge built from concrete particulars that such collections propose. From within the safe boundaries of a book's covers, readers can feel they *know* India.

But if fiction is a great game, it has its own dangers – as *Kim* illustrates equally well. Story draws us in and lowers our defenses; captivated by narrative, "we drop our intellectual guard. We are moved emotionally, and this seems to leave us defenseless" (Gottschall 152). The more deeply readers are absorbed, the more a story can influence beliefs, shaping minds in ways that last (Green and Brock 701-703, 707). Yet this potential can be used for good or ill: fiction may make readers better empathizers, but that is not the same as making them better people.

If learning categorization means learning to privilege the features essential for dividing one group from another, then Kipling's fantasy also practices readers in the British Empire's categories. It reproduces picturesque rules for perceiving landscape, ordering and valuing it according to British aesthetics. It unites "British India" into one entity that ignores serious local differences of culture, history, and religion in favor of the interest of local color. It suggests that outsiders can know a place, through its objects, better than the people who live there and use them. It implies that the rational British are the natural rulers of India, capable of making visual order where disorder prevailed. It flirts with occult magic just enough to satisfy curiosity without requiring its Western readers to abandon a superior self-image. It suggests that useful judgments about not just thoughts, but even character and worth, can be made from appearance. And of course, it positions the Indian “Oriental” – disingenuous, disorderly, in disarray – as the “other” of the rational British. Kipling’s failures, right in the middle of his love, point to the dangers inherent in the perspective-sharing work of fiction’s play. *Kim* suggests that fiction itself might be compared to a thrilling game of pretend – one that offers story’s incredible power to sway, transport, and transform, and also its potential for human mistake.

CODA: CONCLUSION

This dissertation argues that visual information offers one important avenue for the perspective-sharing work that fiction performs, and that greater numbers of Victorian novelists than have been previously acknowledged sought precisely to leverage newly common visual experiences into sympathy. The larger implication of such a claim, as I have suggested, is that these novels (perhaps all widely-shared fiction) also act as cognitive artifacts – as stories that articulate and assimilate changes in British culture. In part through their embodiment of wider cultural movements (industrialization, urbanization, political and economic upheaval, the growth of empire) within specific characters and circumstances, they help to make some sense of what might otherwise be even messier and less digestible to the average reader. As George Eliot's own words quoted in Chapter Four suggest, this was an era in which at least some novelists believed their fiction could *do* things: convey knowledge, spread belief, effect reformation. Eliot shares William Wordsworth's belief that lasting revolutions depend on literature's effect on minds and hearts. While much scholarship to this point suggests that what Victorian fiction *does* when it engages the visual is disrupt sympathy, I have attempted to show that this may be too simplistic a reading of Victorian visual sophistication. Indeed, where Victorian fiction does use the visual to alienate audiences in those works I have studied, this caused surprise enough to suggest the violation of expectation, rather than merely the confirmation of familiar habits of mind.[140]

The project suggests that, if novels are cognitive artifacts for sharing perspectives in order to change minds, their potential may be used for ends good or ill. As my chapters imply, stories can further readers' participation within an imagined community of empire, or challenge readers to see and sympathize with the human face of difficulty during economic turmoil. Stories seem to help humans make order, but the sort of order they make depends on cooperation between writer and reader – cooperation that is also always contingent on both wider cultural trends, and also personal perception and inclination.

As it stands, this project is much wider than it is deep. My work has sometimes felt like aggregation as much as like analysis. At times I have summarized in a few reductive sentences fields that scholars spend careers studying, and, I fear, glossed arguments with nuance not fully captured in my prose. My reach has exceeded my grasp. I am uncomfortable with the dissertation's lack of depth in favor of breadth. To ready it for a book will require significant digging underwater, beneath the places where it currently skates shallow surfaces.

Perhaps the most important personal realization that writing this dissertation produced is my sense of story's ability to shape minds in ways that last. Its claim to interest is its analysis of the historical uses of story.

One final note: Along the way I also discovered that Victorian natural history writing and illustration had an influence on Victorian culture far, far exceeding its appearance in modern critical study. I can so far unearth only a handful of scholarly monographs treating the genre of naturalist writing, despite the historical fact that this material probably appeared in virtually every middle-class Victorian home. I suspect that the hugely popular stories Victorian writers narrated about the natural world – its hidden wonders, its aesthetic interest, its importance for study, its significance for humans – are stories we still need. Rachel Carson's 1962 book *Silent Spring* unleashed contemporary American environmentalism with its narrative of bird death due to pesticide use, and yet other counter-narratives to scientific evidence have proven strong enough that fifty years later a significant percentage of Americans find climate change unconcerning. Some researchers speculate that if current trends continue, in the next hundred years we will eliminate nearly half the plant and animal species alive now (Williams 44).

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[140] Fear may underlie such violations – the half-suspected fear, for instance, that indeed physiognomy did not provide infallible information about others' characters – but this does not necessarily negate the idea that more Victorians found new visual sensations more congenial than much modern critical work suggests.

Nineteenth-century England's industrialization and simultaneous naturalism is thus a story we are still writing. By the same token, it is from influential Romantic thinkers like William Wordsworth and Humphry Davy that we have inherited persistent, if contested, ideas that science ought to serve the public, that an education in science is crucial equipment for good citizenship, that advances in literature and in science ought to be accessible, that individual imagination is hallowed, and that art can elevate and even heal. I have also suggested that Romantic ideas about how humans come to know the inner lives of other humans persist and return. I think there is important work to be done on story as it can help convince the public to conserve the natural world, our shared home. Essentially I hope that Dorothy Wordsworth's naturalist-like stories can be our stories in this sense, too, as they belonged also to the Victorians.

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