Fiction, Empathy, and the Material World

Abstract

Fiction may function to support human social interaction by cultivating empathic abilities. The past decade has yielded promising evidence in support of this theory, though the multidimensionality of both fiction-engagement and empathy have presented methodological challenges and led to mixed findings. Studies have tended to focus on reading and have generally treated cognition as a solely internal process. I position empathy and engagement with fiction as ontologically extended processes. I argue that further systematic exploration of fiction technologies would promote a comprehensive and culturally relevant account of the relationship between fiction-engagement and empathy and enhance understanding of its cognitive architecture.

Keywords: Empathy, fiction, social cognition, extended mind, material engagement theory

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What a miracle it is that out of these small, flat, rigid squares of paper unfolds world after world after world, worlds that sing to you, comfort and quiet or excite you. Books help us understand who we are and how we are to behave. They show us what community and friendship mean; they show us how to live and die. (Lamott, 1994).

Fiction is big business (Nettle, 2005) and a ubiquitous pastime (Loughborough University, 2015; Office for National Statistics, 2012; see also, Barnes, 2012). It has been hypothesised that fiction, which appears to be species-typical and universal, is a nonutilitarian by-product of other evolved capabilities (Pinker, 1997), but it may in fact have an adaptive function (Nettle, 2005; Tooby and Cosmides, 2001), benefitting society through its cultivation of social intelligence (e.g., Oatley, 1999; Pinker, 2011, Zunshine, 2006) and opportunities to explore social and moral themes (Hakemulder, 2000; Nussbaum, 1990, 1995). These ideas have received attention in experimental psychology over the past decade, though research findings have been mixed and this may be due, in part, to the challenges of operationalizing empathy and selecting fiction stimuli. In this article, I introduce the relationship between fiction and empathic abilities, and provide a brief overview of current psychological research and its limitations. Drawing on the extended mind thesis (Clark and Chalmers, 1998) and Material Engagement Theory (Malafouris, 2013), I frame both fiction-engagement and empathising as partly externalised processes and use this framing to make general suggestions for future experimental approaches to fiction effects on empathy.

Fiction and Social Life

Fiction, as opposed to nonfiction and other leisure pursuits, may have social and even societal benefits. This is due to its inherently social focus (Mar and Oatley, 2008; Oatley,

1999): fictional characters are usually human, or they bear psychological resemblance to humans, with non-human protagonists imbued with humanlike traits and involved in human social themes (e.g., Mar, 2009). Whilst nonfiction narratives can also present social events, fiction, which is understood to be nonveridical, provides the opportunity to explore them without real-world obligations or consequences (Keen, 2007). Where nonfiction tends to foreground information, fiction is concerned with possibility, characters and their emotions (Oatley, 1999), and so fiction readers can gain a level of insight into the private thoughts and emotional lives of others usually unavailable in nonfiction prose (e.g., journalism, biography and history; Nünning, 2014).

The more "social" its content, the more people appear to enjoy fiction: Longstanding works such as Shakespeare's plays contain interrelated networks of characters–which reflect the size and structures of most human social networks—navigating social themes. Love and status, for example, are reflected in Shakespeare's comedy and tragedy genres, respectively, at their highest stakes (Nettle, 2005). Children show preferences for stories that contain people rather than objects, particularly those which include descriptions of characters' mental states (Barnes and Bloom, 2014). Appreciation of fictional narratives and the development of children's social acumen may be linked, as the understanding that others have different perspectives to one's own known as "Theory of Mind" (ToM; Premack and Woodruff, 1978), typically develops around age four (Wimmer and Perner, 1983), along with the tendency to become interested in fairytales, and may aid reading comprehension (Astington, 1990; Dore et al., 2018).

ToM can be characterised as a component of "cognitive empathy" (interpreting others' mental states including thoughts, beliefs, motivations and feelings) which, in turn, is contrasted with "affective empathy" (sharing the emotions of a particular target; Cuff et al., 2016). I use "empathy" as the umbrella term under which cognitive and affective empathic

processes sit because its definition encompasses cognitive and affective target content, fictional and imagined, as well as real-world target agents (Cuff et al., 2016), and also because the term invokes its aesthetic origins: The German philosopher Robert Vischer (1873) used "Einfühlung", literally translated as "in-feeling" (Waite, 2012), to refer to the capacity to project feelings of pleasure onto an art piece or object. Subsequently, "empathy" was introduced by the English psychologist Edward Titchener (1909), meaning to *feel into* a person or situation.

Empathy, then, is not a process, but a state "in which one arrives having undergone those grounding processes, whatever they may have been" (Smith, 2017, p. 718). In other words, a range of processes, such as emotion recognition, contagion, perspective-taking and memory could contribute to the state of having empathy (see also, Zaki and Ochsner, 2012). Empathic abilities are generally associated with positive interpersonal relationships and prosocial behaviour (Castano, 2012; Paal and Bereczkei, 2007), but they vary among neurologically typical adults, and selective deficits are characteristic of some developmental differences, clinical and degenerative disorders (e.g., Guastella et al., 2013; Poletti et al., 2012). However, these faculties develop through the lifespan (e.g., Happé et al., 1998), and can be trained (Teding van Berkhout and Malouff, 2016), and so understanding if and how fiction-engagement might enhance them could have real-world social benefits.

Research Findings and Challenges

The most robust psychological evidence of a relationship between fiction and empathy comes from positive correlations between familiarity with fiction authors, a proxy measure of fiction-reading frequency (Stanovich and West, 1989), and performance on behavioural tests of empathy components (for a meta-analysis, see Mumper and Gerrig, 2017). This association appears stronger for fiction compared to nonfiction (Mumper and Gerrig, 2017) and to sustain when familiarity with nonfiction is statistically controlled for

(e.g., Mar et al., 2006; Turner and Vallée-Tourangeau, 2023). This indicates that the narrative features of fiction enhance empathy above and beyond general reading processes. Experimental studies have supported this hypothesized direction of cause, revealing a small, immediate and positive effect of fiction-reading on empathy task performance (for a meta-analysis, see Dodell-Feder and Tamir, 2018), although this literature is mixed with some key results failing to replicate (e.g., Camerer et al., 2018; Panero et al., 2016; Samur et al., 2018; though see Kidd and Castano 2017, 2018a, 2018b; see also, Panero et al., 2017; Van Kujik et al., 2018).

Inconsistencies across experimental findings may be attributable to the challenge of working with empathy and fiction-engagement, which are both multidimensional constructs (Turner, 2020). Studies have used a range of self-report and behavioural tasks to probe empathy processes, including perspective-taking (e.g., Mar et al., 2006), emotion recognition (e.g., Pino and Mazza, 2016; Kidd and Castano, 2013), and emotional responses to others (e.g., Koopman, 2015; Pino and Mazza, 2016), as well as associated constructs like sympathy or concern (e.g., Bal and Veltkamp, 2013; Mar et al., 2006), and prosocial behaviour (e.g., Koopman, 2015; Johnson, 2012). These processes show substantial within- (and between-) person variation (Cox et al., 2012) and they can dissociate (Oakley et al., 2016), reflecting the heterogeneity of the empathy construct (Cuff et al., 2016; De Vignemont and Singer, 2006). Moreover, the same outcome measures have been used to assess different aspects of empathy across studies—reflected in a range of terminology such as "ToM", "interpersonal sensitivity" and "mentalizing"—and this raises concerns about construct validity (Black et al., 2021).

Fictional prose varies by length, theme, genre, narrative and linguistic complexity, narration and focalisation, as well proximity to, or mimetic resemblance of, historic or current events. Fictions also differ in their ability to imaginatively "transport" readers, a process

which appears to moderate some narrative effects (e.g., Green and Brock, 2000; Schwerin and Lenhart, 2022). Defining the features responsible for fiction effects has thus presented a challenge for researchers. Where studies have aimed to do so via experimental comparison (e.g., "literary" versus "popular" genres; Kidd and Castano, 2013), random assignment to one of an assortment of texts presents issues of within-group heterogeneity even when efforts are made to match text stimuli for length and complexity. This issue can be addressed using multilevel statistical models (e.g., Panero et al., 2016) but this has not been general practice, which may have led to false positive results (see Judd et al., 2012). The alternative is to vary elements of a single stimulus text (e.g., Koopman, 2016), but this strategy reduces generalisability, slowing the accumulation of evidence, and while successful replications bolster found effects, they do not necessarily shed further light on the mechanisms responsible.

Reconsidering Reading

Stories vary not only in their narrative elements, but also in the technologies used to construct and present them. This article's epigraph emphasises the profoundly felt personal and social impact of books, yet stories do not only reside on "flat, rigid squares of paper" (Lamott, 1994, p. 15). One could be familiar with a wide range of literary works without having read a word of them: stories are available on the TV, on film, in the theatre, via interactive and virtual gaming and roleplay, tablets and audio devices. Nonetheless, the majority of studies investigating fiction's effects on empathy have focused on reading (Black and Barnes, 2015; Turner and Felisberti, 2018). There are three core reasons for this: First, the relationship between stories and empathy has traditionally been the subject of literary scholarship where it forms part of a longstanding agenda—rooted in eighteenth century distrust of the popularization of books—to understand how literature could influence readers' expectations, actions and morals (for an overview, see Keen, 2007). Second, where

experimental studies have since addressed the question using psychological measures typically designed for developmental populations or diagnostic purposes, mixed results have raised doubt about the causal effect. Establishing this fundamental link has taken precedence over exploration of potential moderators, including medium. Third, the majority of the psychological fiction-effects research is grounded in the cognitivist (internalist, representationalist) paradigm, which models cognition as a form of information processing in which mental (and neural) structures mediate sensory inputs and behavioural outputs (Simon, 1979). Through this lens, the social knowledge or skill acquired through fiction-engagement is understood to be consumed, internalised and later applied to real-life scenarios. This does not preclude the use of other media stimuli, but emphasis on the manipulation of social content "in our heads" (Gallagher, 2013) results in ontological indifference towards the form—and associated material properties—through which that content is presented. Using text, which is often the most practical approach, is deemed methodologically sufficient.

These assumptions warrant reconsideration. First, it is true that reading literature continues to account for a substantial portion of many people's leisure time (e.g., Barnes, 2012); however, more people watch television (e.g., in the US, UK, China and Germany; Bureau of Labor Statistics, 2017; Seddon, 2011; Statistica, 2022; Stiftung für Zukunftsfragen et al., n.d.), and many engage with cinema, theatre, radio, audiobooks, and virtual gaming. In order to create a culturally relevant account of fiction effects, it is important to address the range of technologies through which fiction can be, and is, consumed. Second, robust correlational evidence (Mumper and Gerrig, 2017) and positive experimental findings (Dodell-Feder and Tamir, 2018) support the existence of a true effect of fiction on empathy. Certainly, it is necessary to confirm and unpack the mechanics of this relationship, but emphasis on reading is not a prerequisite. Reading is not the original method of engaging with stories nor the most common. Oral storytelling is culturally universal (Brown, 1991), has

existed since humans developed the capacity for speech (Zipes, 2012), and the earliest stories

were shared in this way. For example, the *Cosmic Hunt* myth appears to have been told when

there was a land bridge connecting the areas that are now Alaska and Russia, dating it

between 28,000-13,000 BC (Storr, 2019), and Aesop's Fables were not written down until the

200s BC—three centuries after they were created. Spoken word, performance art or radio,

therefore, are closer than books to the origins of storytelling.

Finally, most current studies of fiction effects on empathy implicitly cast cognition as

the "brain-bound affair" (Barona, 2021, p. 138) of generating internal representations from

external stimuli. ToM, for example, tends to be measured using false-belief tasks, social

vignettes or narratives, or via emotion recognition tasks (for an overview of behavioural ToM

tasks, see Turner and Felisberti, 2017). These tools are not theoretically neutral but signify a

specific perspective which construes individuals as having "folk theories" of behaviour that

they use to ascribe mental states to others. Consider the most commonly used behavioural

task in the fiction-empathy field (see Dodell-Feder and Tamir's, 2018, and Mumper and

Gerrig's, 2017, meta-analyses; see also Black et al., 2021): Baron-Cohen et al.'s (2001)

Reading the Mind in the Eyes Test. This task requires participants to interpret the emotions

contained within photographs of disembodied eyes and to ascribe appropriate verbal labels

from selections of terms. Other common measures ask participants to name thoughts or

emotions based on pictures or vignettes (e.g., Emotion Attribution Task [Blair and Cipolotti,

2000]; Yoni Task [Shamay-Tsoory and Aharon Peretz, 2007]), or to reflect on, and express

via self-report, their general tendencies to appreciate others' mental experiences (e.g.,

dimensions of the Interpersonal Reactivity Index [Davis, 1983]; Toronto Empathy

Questionnaire [Koopman, 2015]). Thus, the most commonly used tasks have been based on

the presumption of a detached observer who uses mental representations to consciously

reflect on the mental states stored in other people's heads.

The rise in "4E" approaches offers an alternative ontology of mind, where cognition is characterised not as taking place solely "north-of-neck" (Fodor, 1999, p. 98), but as *embedded, enacted, embodied* or *extended* via processes and structures outside the head (for an overview, see Carney, 2020). Proponents of 4E approaches argue that the cognitive processes studied in modern cognitive science are dependent on the agent's body, their environment, and interactions between the two, though they vary in how these integrate (Newen et al., 2018). Take, for example, numerical cognition: counting need not rely on internal linguistic representations (Clark, 2006) when natural numbers can be found, used and manipulated on bodies (fingers and so on, e.g., Saxe, 1981) and in the environment (e.g., tokens and tallies; De Cruz, 2008). Although they are unified in opposition to internalist, brain-bound perspectives, there are conflicts within 4E approaches (Shapiro, 2010). For example, embedded theories retain an emphasis on internal, representational structures that contain knowledge about the world (Kiverstein, 2018). In contrast, the extended theories based on Clark and Chalmers's (1998) extended mind (EM) thesis argue that, due to environmental resources taking an active role in cognitive processes (e.g., tools and technologies such as diaries and computers), they can, in some conditions, be considered constituents of those processes (Kiverstein, 2018; Malafouris and Renfrew, 2010).

Social cognition is the system of mechanisms and processes that enable humans to make sense of social information and behave appropriately in specific social contexts (Shany-Ur and Rankin, 2014), and so the environment is fundamentally important to accounts of social cognitive processing. Works of fiction, as inherently social and modally diverse, represent information to be processed using social cognitive apparatus as well as tools, situated within environments, that can be considered constituents in those processes. In the following sections I draw on extended approaches in order to outline how the properties of a given fiction presentation are integral to the emergence of the empathic processes involved in

its understanding, and describe how fiction-engagement and empathy processes may continue to impact each other over time at the cultural level.

Fiction and Empathy in the Material World

Traditionally, theory-based accounts of empathic abilities (e.g., ToM; see Coll et al., 2017) have been contrasted with simulation accounts ("Theory-Theory" versus "Simulation Theory"); the latter being the idea that observers use the same mental apparatus when interpreting the thoughts and feelings of a target person as that person uses when having those thoughts and feelings (e.g., Coplan, 2011; Goldman, 1995, 2006). Despite often being pitted against one another, these accounts are not mutually exclusive, and social cognitive processes have been modelled using both domains (supported by neuroscientific evidence, Zaki and Ochsner, 2012; Goldman's, 2006, simulation account is also integrative, but with simulation at the forefront). This dual-process approach is reflected in Mar's (2018) proposal that fiction-engagement may enhance empathy through two routes: the accumulation of social knowledge via the social information presented ("content") and the recruitment and honing of mental apparatus used in real life social scenarios ("process"), with the majority of studies revealing effects along the latter route.[1] For example, Tamir et al. (2016) found that brain activity in the dorsomedial prefrontal cortex, a subnetwork of the default network—the latter known to be involved in simulation of spaces, scenes and mental states—mediated the positive relationship between fiction exposure and performance on a ToM task. This builds on the substantial body of work revealing perceptual and motor simulation processes involved in the interpretation of language (e.g., Speer at al., 2009; for an overview, see Bergen, 2012).

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[1] For summaries of this and other theories of narrative effects in fiction and nonfiction, see Green et al. (2020).

In social cognition, too, Simulation Theory has been endorsed by the discovery of mirror neurons that enable automatic mimicry at the neural level (Rizzolatti et al., 1996). Emphasis on neuronal activity can perpetuate an all-in-the-head ontology of empathy, yet empathy represents an embodied phenomenon since mental states are enacted via the animate body (via facial expressions and gesture) and, as they are directly perceptible, they do not need to be interpreted using folk theory (Krueger, 2009). Empathy is also situated within specific social interactions, and it is extended, because when sharing in another person's experience, particularly if mirror neurons are "coupled" via simulation (Iacoboni, 2008, p. 265), the perceiver exploits the part of the environment that is the other person. Thus, the individual is extended socially (the cognitive process is "distributed" across individuals; Flor and Hutchins, 1991), having evolved to be "plug-compatible" (Kosslyn, 2007, p. 547) with other humans. This is not to say that traditional perspectives on social cognition no longer have a place. Rather, 4E approaches can enrich these "representation-hungry" accounts (Herschbach, 2018, p. 524) in that cognitive events, such as the interpretation of a target's emotional state, are seen as extended and processual, involving the brain, but also the body and its surrounding context (Krueger, 2009). This model moves intersubjectivity, at least in part, out of the head and into the systems and structures of the social environment.

Empathy, then, is extended through other people (day-to-day empathy), as well as through fictional tools (fictional empathy); works of fiction are part of the social environment and they are also tools for presenting social life. From a cognitivist perspective, fictions are products of a unidirectional, causal process wherein thoughts or mental representations flow out of the mind of a writer and are put onto paper via the writer's hand; the mind is sequestered away from the body which, in turn, is detached from pen, ink and paper (or computer keyboard; Bernini, 2014). This leaves little room for the kinetic and material dimensions of the "doing" of writing (Freiman, 2015; see also, Booker Prize nominee Alan

Garner, 2022, describing his preference for the "mysterious" kinetic and intuitive experience of writing rather than typing), for writing as thinking (Menary, 2007; Oatley and Djikic, 2008) or as "thought in action" (Menary, 2007, p. 630); rather, penned or typed language simply functions as external storage for internal ideas. If story-production involves a one-way route from brain to page, one could not say "the book wrote itself", or "the characters took on lives of their own" (see Taylor et al., 2003), or even "it didn't make sense until I read it back". There can be no dialogue between the characters and their writer who feels compelled to create particular outcomes for them and empathises with them when reading back, acting simultaneously as author and reader, nor can the experience of developing ideas through brainstorming or redrafting be readily accounted for (e.g., Bernini, 2014; Clark and Chalmers, 1998; Freiman, 2015). This yields a static object incapable of surprising the author, of which interpretation constitutes an entirely separate act. On the other hand, considering story-making as a process of externalised cognition positions both the author's mind and external writing materials, including language (Clark, 2008), and technology (Bernini, 2014), as constituents of the cognitive ecosystem (Hutchins, 2010) from which the fictional narrative emerges (Clark and Chalmers, 1998), and invites the reader into the equation.

The theory that fiction can influence real-world empathy for others is based on the notion of a reader who actively makes sense of the story (e.g., Barthes, 1967/1977) and so who, through reading, has a functional role in its creation (I use "reading" as shorthand for the consumption of fiction in a given format). The extent to which imaginative effort, as opposed to more passive or immersive engagement, underlies fiction effects on empathy, remains unclear, with more research needed (see Hakemulder, 2000; Kidd and Castano, 2013, cf. Turner and Vallée-Tourangeau, 2020). However, the implication is that just as empathy emerges from interaction between two or more systems (those of empathiser and target), the

meaning of a literary narrative is distributed across (at least) two minds—those of author and reader—and unfolds amid the interplay of the systems surrounding each.

Material Engagement Theory (MET; Malafouris, 2013) sheds light on the nature of these systems. Like EM, this cognitive archaeological approach moves beyond internal mentation to describe and examine the "middle space where brain, body, and culture are conflated" (Malafouris, 2020, p.3). As with EM, in MET, external artifacts (as well as bodily and cultural things) are conceived as cognitive constituents. In his challenge to anthropocentric definitions of material agency, where material objects are only considered active in relation to human use of them, Malafouris's (2008, 2013) MET account distinguishes between having a sense of agency, which may be a solely human phenomenon, and agency itself, which is not (Barona, 2021).[2] To borrow Malafouris's example, a clay pot is not simply the product of the potter's mental idea for a pot with which the clay subsequently complied. Although the potter may have a sense of their own agency in the process, the pot was formed not by the potter's impositions on the clay but via dynamic (and potentially equitable; Clark, 2007) interplay between the potter's body, the wheel, and the clay's affordances (Gibson, 1979). There is an implied symmetry (Latour, 1999) between people and *things* (Malafouris, 2020), where both have agency, with things at once external to the body but internal to the cognitive ecosystem.

Making fiction, technologies such as pen, paper, computer keyboard, as well as the materiality of words (printed or sounded out) are the *things* internal to the process while being external to the writer's body. Just as the potter has a sense of authorship as the creator of the finished pot, the writer feels that they have authored the written story, though it is

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[2] Latour (1992, p. 241) uses the term "actant" to denote the things which become active through some form of doing, and in the field of narratology, the same term refers to roles such as "hero" or "villain" on whom a story's structure relies (Greimas, 1973/1987).

actually a process of co-creation between people and materials (Malafouris, 2013), emerging via "inextricable tangles of feedback, feedforward and feedaround loops that promiscuously criss-cross the boundaries of brain, body and the world" (Clark, 2012, p. 277). Depending on medium, authorship (and sense of authorship) may be distributed across a range of creative units. In film, for example, authorship is routinely extended across translators, screenwriters, producers, directors, actors, musicians, make-up artists, set designers, editors and so on. Each unit or department, drawing on its own specific equipment and materials, contributes to the larger project of the film as a whole. The "language" of the story refers both to the words used to convey its narrative and to the semiotic opportunities afforded by the medium through which it is presented (e.g., *cinematic language*).

When interpreting this language, the reader brings their unique, inter- and intra-cultural experiences of similar environments, including encounters with the language of the format, such as experience with cinematic or theatrical devices, particular themes and tropes, as well as the social environment associated with the modality. To borrow from Gallagher and Ransom's (2016) application of MET to joint attention, a social interaction in which individuals coordinate their actions, involving the social cognitive ability to move beyond egocentric perspectives on the world and meet another person in a shared cognitive space, the reader's sensemaking is "extended across brains-bodies-agents-environments, in ways that incorporate relevant (and potentially unique) background components" (p. 344). A tool's usage or "meaning" or "what's-it-for-ness" is not stable and objective but changes with each new user, or with the same user over time, and this is impacted by the present environment as well as experience of previous environments. In the same way, the meaning of a story is not stable but varies with the affordances and environment of each presentation of it both within and between readers.

Originations and Interpretations

If fiction sensemaking emerges from interactions between story authors and story readers (Popova, 2014), with the reader both impacted by the story and active in the construction of its meaning, then the process of reading represents a spiralling system of origination and sensemaking or interpretation. In this way, the continuous creation of any work of art is distributed along its path of life, rendering unclear whether it is the artist or the audience who is creating the work (Latour, 2013). This dynamic process occurs across several levels. At the individual level (insofar as any aspect of the process can be thought of as concerning individuals disentangled from sociocultural contexts), readers vary in their style of engagement; for example, by taking protagonist versus eyewitness perspectives regardless of whether the narrative is first- or third-person (Hartung et al., 2017). Additionally, bringing new life history to each reading means they experience the story differently every time. At the social level, readers may engage in conversation and commentary which layers meaning onto the "finished" fiction product, and fiction has recently become more interactive due to the internet facilitating discussion amongst audiences and critics, fan theories and fan fiction creations (see Rose, 2011). At this level, interpretations of a work of fiction can diverge a great deal: "the more we interpret it the more we unfold the multiplicity of those who love it as well as the multiplicity of what they love in it" (Latour, 2013, p. 241).

At the cultural level, each subsequent iteration of a story contributes to its cultural manifestation (and the internet has made stories evermore transmissible across cultures). This layers onto the story's next telling—be that in conversation, via commentary or a new format—as well as on "new" fiction productions. For example, linguistic intensifiers such as "really", "very" and "so" in the TV sitcom *Friends* (Bright et al., 1994-2004) reflected but may also have innovated language trends (Tagliamonte and Roberts, 2005), and the durability

of Shakespeare's works has resulted in many of his phrases appearing in contemporary parlance. In the former, the (untrue) reference to lobsters as animals that mate for life ("he's her lobster") may have influenced the darkly comic absurdist film *The Lobster* (Lanthimos, 2015)—which features an institution that requires single people to meet romantic partners or else be permanently transformed into an animal of their choosing—or audiences' interpretations of it at least. Dickens's *Oliver Twist* raised awareness of the cruelty of the workhouse system in Victorian England. Originally published in monthly instalments, a large portion of the chapter following Oliver's request for more food describes the punishments visited upon him for doing so (Richardson, 2012). Much of this tends to be omitted from contemporary versions of the story, perhaps because the workhouse system no longer exists and modern audiences do not have so strong an appetite for the visceral experience of it afforded by film or TV remakes. Pinker (2011) has argued that the perspective-taking experience afforded by books—which became widespread following the development of the mechanical printing press (in the mid-1400s; Lagerfeld, 1986)—reduced public enjoyment in witnessing the suffering of others (e.g., attending public corporeal punishment). Thus, the general effects of fiction on empathy can be seen to have directly influenced the ways in which such stories get retold. Whilst *Friends,* Shakespeare and Dickens represent particularly influential examples, the cultural lives of all works of fiction are constructed through ongoing spirals of making and sensemaking which dynamically intersect the levels of individual, society and culture.

Cognition and Culture

Engaging with falseness in fiction is a common phenomenon but it is also a strange one: stories communicate cultural values, which impact cultural practices, but while people are intensely interested in accuracy when information is intended to be truthful, they selectively suspend disbelief for fiction (Tooby and Cosmides, 2001). Difficulties interpreting

pretence in some populations (e.g., autism; Jarrold, 2003) indicates that this capacity is not a by-product of general intelligence but arises from a specialized subsystem built into the human cognitive architecture (Tooby and Cosmides, 2001).

If fiction-engagement and empathy are served by the same social cognitive mechanisms, including mentalizing, emotion perception and response, then fiction can be seen to shape empathy and empathy to shape fiction as part of the dynamic process of origination and interpretation (or making and sensemaking) characterised above. The MET perspective foregrounds the role of material culture in this fiction-empathy loop. According to MET, external materials do not simply scaffold the ways people think, they also shape them. To revisit the numerical cognition example from earlier, the archaeological record indicates that numeracy co-evolved with the making of clay tokens used to perform accounting tasks (Malafouris, 2013), and addition appears to have emerged cross-culturally before subtraction and other operations, perhaps because adding notches to a tally stick is easier than erasing them (Overmann, 2016). Humans do not create a tool or a work of art via a one-way causal process; "we make things which in turn make us" (Ihde and Malafouris, 2019, p. 195). This macro perspective, which explains how tool use can impact cognition transactionally as well as cross-culturally and over time, resonates with the central assumption of fiction-empathy research that both real and fictional social information is understood using the same cognitive mechanisms (Gerrig, 1993; see also, Bergen, 2012), and that the impetus to experience empathy and explore social stories hones the processes which support their understanding (though this is usually described in terms of knowledge acquisition and internal mentation; Mar, 2018; Mar and Oatley, 2008; Oatley, 1999, 2011; Oatley and Djikic, 2017; cf. Currie, 2003, and Keen, 2007).

New technologies are not conjured by authors who require them to tell particular stories. Rather, specific technological affordances mediate the creation and interpretation of

stories in ways which impact their real-world effects on empathy and, in turn, future iterations of those stories. For example, the advent of private, leisure-reading from the 1400s—late 1700s that followed the development of the mechanical printing press (Lagerfeld, 1986), enabled mass access to the personal lives of distant characters. The popularity of stories consequently expedited the evolution of a range of mass storytelling technologies, each entailing the engagement of different empathic processes. Despite the subsequent proliferation of radio, television and the internet, print literature (along with later technologies) has sustained (or adapted; Scolari, 2013), indicating that it affords something its counterparts do not; it is functionally unique. As McLuhan (1964/1994) put it, "the medium is the message": medium is fundamental to the way content is experienced. The medium is also the *ma*ssage (McLuhan et al., 1967/2008)—it affects the whole sensorium (this update amounted from an error in typesetting the original phrase for the new publication which McLuhan liked and decided to keep; McLuhan, n. d.). As fictional content presented via different technologies is perceived and processed through the body in different ways, material culture is essential to the way it is engaged with, understood and ultimately reapplied.

Extending Fiction-Empathy Research

If we accept Malafouris's proposal that minds and things are not only causally linked but are "constitutively interdependent" (one cannot exist without the other; Malafouris, 2013, p. 77), as well as the theory that fiction-engagement and empathising are consubstantial, involving the same cognitive apparatus, then we must view the material affordances of fiction technologies as constituent in the emergence and evolution of empathy. This is not simply an abstract, theoretical consideration: because empathy is multidimensional, the mode through which a story is presented may have specific and unique effects on different and sometimes dissociable processes.

Consider, for example, variations in the presentation of Lady Macbeth's descent into madness afforded by different fiction technologies. The radio actor delivers lines with a trembling voice, whereas film enables close-ups of a tearful face, atmospheric scenography, music; perhaps even an informative flashback. At the theatre, the actor's voice is projected into the auditorium and this technique necessitates a level of physical effort and accompanying bodily expression that film acting does not usually require. Meanwhile, when reading the text in a volume of *The Complete Works of Shakespeare,* imagination helps to set the scene, adjusted by prior knowledge (including of the story and its many iterations), and constrained by the reader's present environment. Reading, listening or viewing will engage the "grounding processes" (Smith, 2017, p. 718)—emotion perception, memory, simulation and mental representation, for example—that contribute to empathy, to different degrees. Thus, mental representation alone does not account for the complexities of empathy in fiction-engagement; rather, it has a greater or lesser role depending on modality, with certain technologies facilitating direct perception of social content in ways that more closely reflect real-world social processing.

Moreover, the reader, listener or (at-home) film viewer has the option to move forward and backward between scenes, revisit key moments or background information, skim over or skip gory sections, and check how the story concludes. Recalling empathy's origin as an aesthetic experience, the tool becomes something that is *felt into* and experienced as responsive to the agent's explorations (Chemero, 2016). This level of interaction would be impossible in the theatre or cinema, although these modes may incorporate other devices to impact sensemaking (e.g., "easter eggs"—hidden elements which call-back or foreshadow parts of the story or reference other stories). New theatre technologies, for example, have increased options for cueing action (e.g., stagehands wearing headsets), enabling productions to incorporate complex and multimedia design elements, interactive costumes, performer-

controlled lighting and sound, audience participation and multi-sensory immersive experiences (Nicholas et al., 2021). Advances in interactive viewing technologies have recently enabled mass engagement with do-it-yourself film plotlines—in 2018, streaming service Netflix released its first interactive film, *Black Mirror: Bandersnatch* (McLean and Slade, 2018)—facilitating risk-free exploration of potential outcomes to a range of fictional social scenarios.

Active "writerly" engagement (Barthes, 1967/1977) may not only be a function of some fiction formats, but may be *required* for empathic processes to be meaningfully impacted (Hakemulder, 2000; Kidd and Castano, 2013; Zunshine, 2006). It may be that the relative visual and auditory poverty of books entails empathic faculties to be engaged through simulation to a greater degree than film, for example, through which some mental states can be directly perceived. On the other hand, experience with close-ups in film might support facial emotion recognition or emotion sharing, particularly when paired with a congruent soundtrack. Any mode which allows the reader or viewer to refer back to important contextual information might support accuracy or efficiency in interpretating complex beliefs and intentions. The uniquely social, collaborative and synergistic engagement opportunities of immersive theatre and virtual reality might engage these faculties further, as participants become acutely aware of their own agency and impact on the narrative world (e.g., Turner and Kasperczyk, 2022). Here, the "exchange of one's own reality for the sensations of another takes to its furthest logical extension the fusing with another object that aesthetics' *Einfühlung* set out to describe" (Keen, 2007, p. 39). These questions can only be explored through examination of the varying textures, social and material affordances of different modes of fiction-engagement.

While most fiction-empathy research has used written text as stimuli, some studies have examined the effects of other presentations of fiction (e.g., Black and Barnes, 2015; Mar

et al., 2010; Turner and Felsiberti, 2018) and yielded promising results (cf. De Mulder et al., 2022). How far different technologies correspond with different empathy components has yet to be identified, however, as well as strong evidence of causation. This could be addressed by examining the effects of a single, selected technology on a selected empathy component or components. To some degree, this approach is already being taken, albeit for different reasons: in some studies, text is presented on paper and in others on screen, a practical consideration which, despite evidence that this likely results in processing differences (with documented effects on absorption and comprehension; Mangen and Kuiken, 2014; Singer Trackhman et al., 2019), rarely features in theoretical discussions.

A more ambitious approach would involve comparing effects of different presentations of the same story on a selected empathy component or components; for example, comparing reading a story to listening, to viewing a film version or live performance of it, to participating in gaming or interactive performance versions. Experiments could measure empathic accuracy or efficiency, while incorporating different target content via visual, auditory, and narrative tasks (for an overview, see Turner & Felisberti, 2017), because identifying the particular domains impacted within participants is essential to understanding how far specific technological affordances contribute to specific empathic processes. Developing this line of enquiry, "active" versus "passive" engagement styles could be compared between technologies, by contrasting theatre, gaming or film, where visual and auditory cues are provided, to reading, where they are intuited. This could ultimately be combined with within-technology comparisons of complex or self-guided versus predictable plotlines, the presence versus absence of specific stylistic features (e.g., Koopman, 2016), or manipulation of engagement levels (e.g., Turner & Valleé-Tourangeau, 2020). These approaches would enable assessment of the transferable effects of social processing afforded by different fiction technologies. However, larger participant numbers

would be required to reduce statistical noise, and researchers creating heterogenous conditions (e.g., by using a range of texts) should account for the random effects of stimuli via mixed effects analyses.

The field of experimental research in fiction effects on empathy has inherited several methodological challenges. Many of the measures employed were originally designed to detect deficits rather than natural variation within and between individuals (Turner & Felisberti, 2017), and the lack of uniformity across measures, as well as the range of fiction stimuli used between and within experiments, has made it difficult to confidently infer fiction's causal effects on empathy. In the real world, people are exposed to fiction via different media over time, whereas most experimental protocol has involved examining empathy levels immediately after exposure to short excerpts of fictional prose (Mar, 2018; Quinlan et al., 2023). Moving forward, researchers may conceive entirely new, de-individualised methods of investigation which do not demarcate thought from embodied activity (see Malafouris, 2013) or from its social, cultural and material context. Such approaches could incorporate observational methods and yield rich, longitudinal data aimed at capturing situational effects and establishing their durability, as well as long-term interactions between patterns of fiction-engagement and empathy. In the meantime, the suggestions offered here are not aimed at further complicating data collection, but at a reorientation toward material technological, rather than abstract stylistic fiction comparisons. This approach has implications at the individual level, with potential application to specific areas of social cognitive skills development, and at the sociocultural level, where it may offer insight into the gradual expansion of empathy for others beyond the immediate ingroup (Pinker, 2011; Singer, 1981/2011), as well as observed declines in some empathy components in certain populations (e.g., American university students; Konrath et al., 2011; see also, Zaki, 2019). Bringing the extended architecture of empathy and fiction-engagement

into focus offers a framework for understanding the role of fiction technologies in shaping, and being shaped by, the multidimensional empathy skillset.

Conclusion

Traditional information-processing accounts construe cognition as an intracranial affair (e.g., Adams and Aizawa, 2008), and social cognition as an inter-intracranial one, realized via brain processes (Newen et al., 2018). EM (alongside other 4E approaches) and MET have offered an alternative ontology of mind, arguing that it can be extended beyond the brain, via interaction between brains, bodies and environments. Fiction-engagement and empathising are cognitive acts that occur, at least in part, outside of people's heads. However, extant fiction-empathy research in Psychology has been based on traditional cognitivist models which conceive readers as gaining social skills through the acquisition of social knowledge contained in fiction or via mental simulation reliant on internal representations. MET explains how, as humans, we define and make ourselves through technologies and tools. This is also true of fictions, through which human social life is both presented and learned from via ongoing interaction between socially, culturally and environmentally situated systems of origination and interpretation. Inviting the environment of the reader or sensemaker into the fiction effects equation via systematic study of fiction technologies would provide a more comprehensive and culturally relevant account of the fiction landscape, and the opportunity to model the architecture of the evolving fiction-empathy relationship.

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