Distributed Cognition in Medieval and Renaissance Studies

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The purpose of this chapter is to provide a background to current research in medieval and Renaissance studies on topics related to distributed cognition and to consider how the various chapters in this volume represent, reflect and advance work in this area. The volume brings together 14 chapters by international specialists working in the period between the ninth and the seventeenth century in the fields of law, history, drama, literature, art, music, philosophy, science and medicine. The chapters revitalise our reading of medieval and Renaissance works by bringing to bear recent insights in cognitive science and philosophy of mind on the distributed nature of cognition. A distributed cognitive approach recognises that cognition is brain, body and world based. Distributed cognition is a methodological approach and a way of understanding the actual nature of cognition. Together the chapters make evident the ways in which particular notions and practices of distributed cognition emerged from the particular range of sociocultural and technological contexts that existed during this period. This chapter attempts to put these contributions in their wider research context by examining how such topics have been approached by mainstream scholarship, earlier work in the cognitive sciences and by existing applications of distributed cognition theory. Throughout this chapter, I reference the chapters in this volume that provide further information on topics covered or that take forward the issues in question. In the concluding section, I turn to a fuller overview of the chapters themselves.[1]

Medieval and Renaissance Studies

The confrontation of medieval and Renaissance studies with cognitive scientific methods and theories dates to around thirty years ago and, especially at first, had an impact only at the margins of mainstream scholarship. This confrontation has progressively helped to fuel growing interest in medieval and Renaissance insights into (and superstitions about) the cognitive roles of the body and environment. In this section, I start with a general overview of medieval and Renaissance studies. I then examine in more detail how various topics covered by traditional scholarship have been affected by the cognitive sciences and the emergence of new areas of focus under the expanding influence of approaches explicitly informed by theories

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[1] For assistance with this chapter I am very much indebted to Sarah Brazil, Douglas Cairns, Terence Cave, Mark Sprevak and Michael Wheeler.

of distributed cognition. This more detailed analysis will include discussion of scholarship on the following topics: the mind, life and soul; the body and environment; the emotions; language and linguistic theories; theory of mind and interaction theory; the self and subjectivity; social, material and conceptual environments; the memory arts, orality and literacy; and finally, literature and the arts.

If we begin by looking back to early notions of philology, we can already find expressions of the idea that the human mind considered on a historical scale involves both elements of change and continuity across different periods. Erich Auerbach (1949), paraphrases Vico's historiography thus: the 'entire development of human history, as made by men' is 'potentially contained in the human mind' though 'in each period the institutions are in full accordance with the human nature of the period' (117-18). The spectre of Woolf's *Orlando* momentarily flickers before one's eyes: persistent yet fluidly shifting between periods. The argument is that, despite the distinctiveness of human minds in different periods, the creations of human minds from any period are accessible to other human minds because of our shared nature. Such a view ventures part way towards to a distributed cognitive approach, because distributed cognition posits the *persistent* nature of certain human traits, particularly our psychophysiological plasticity, at the same time as this human *adaptivity* to cultural, physical and linguistic variables tempers any notions of universals.[2]

Burkhardt ([1860] 1960) may have overstated the claim for the emergence in the Renaissance of an individualism that was more self-conscious, transparent and objective, but he helped to establish a basis for examinations of historical periods that spanned the cultural and social realms.[3] In medieval and Renaissance studies, the twentieth century saw a gradual broadening of attention from a focus on pinpoints, such as monarchs, religious leaders, and famous political, diplomatic and military events to consideration of phenomena such as social, economic and political systems, community practices, changing values and the roles of previously neglected groups.[4] The Annales School led to a new emphasis in literary and historical studies on attempting to recover the *mentalités* of earlier generations. This often took the form of sociologically inspired explorations of collective and symbolic practices over the *longue durée* and of individuals and events as embedded in milieux. This approach was further

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[2] While they are often treated separately I refer here to 'the medieval and Renaissance period' in the singular since this is the period covered in this volume. Similarly, we've chosen to use the singular term 'culture' in the title of the volume despite the objections that might be raised since even when referring to a single period critics often use the plural form to clarify their recognition of plurality and diversity. Yet any complex culture is necessarily plural and diverse; therefore, the term 'culture' when applied to an expanse of time or space is indicative of plurality and diversity.

[3] 'Here the human spirit took a mighty step toward the consciousness of its own secret life' (Burckhardt: [1860] 1960: 229).

[4] While the changes I'm referring to here occurred over many decades, there are outliers who pioneered these developments long before they became more general, such as Eileen Powers, who is now perhaps best known for her posthumously published work *Medieval Women* (1975).

disseminated through the rise of structuralism.[5] To an extent we can see here the anticipation of distributed cognition theory in terms of the attention paid to external influences shaping of human nature, as in this remark by the historian Lucien Febvre that:

> every human individual is subject to such powerful influences, some reaching us from the very depths of time, others being entirely immediate, emanating from the living environment; especially if we remember that such influences are in the first instance transmitted via language and tools. (Febvre [1938] 1973: 4)

However, the claims for the situatedness of *mentalités* and against atemporal categories could also lead to a neglect of phenomenological experience and an overemphasis on radical disjunctions: 'the science of our contemporary psychologists can have no possible application to the past nor can the psychology of our ancestors have any possible application to the men of today' (Febvre [1938] 1973: 5).[6]

Furthermore, by the 1980s and 90s this trend had developed into a still productive but excessive focus on the effects of sociocultural forces on human concepts, behaviour and practices. Under the auspices of postmodernism, anxiety-beset theories of human extendedness (though this term was not in use) came to the fore, with the subject's construction by external forces perceived as a disturbing necessity. Psychoanalytical theories, poststructuralism, deconstructionism and even cybernetics had all further directed the focus onto the play of discourse and arbitrary symbolic forces.[7] Bodies and events became understood primarily as merely ideological structures and discourses were viewed as performative sites of power and subversion.[8] While on the one hand this shift in thinking had led to the rejection of the then still widespread belief in the universal nature of man, along with a diminution of the tendency to revere great men and Western values alone, on the other hand, it virtualised human nature and relativism, and in fact often led to presentism, with a typically contemporary bent to the issues studied. Postmodernism particularly affected Renaissance studies, which pioneered New Historicism as a means to examine issues such as historical constructions of gender, heteronormativity, self-fashioning and colonialism. In this new guise the view of the Renaissance as the birth of individualism and modernity returned. Medievalists complicated such claims, primarily by adopting New Historicist premises themselves, for instance, by

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[5] For a detailed overview of the Annales school see Dosse 1987.

[6] Stuart Clark (1983: 69) caricatures the view that the *Annales* school had of the masses: 'Preoccupied with surviving in hostile, mysterious surroundings, lost in a world of which they had only imprecise knowledge, simple men became victims of severe, even psychotic anxiety'.

[7] See for example Hayden White's *Metahistory* (1973). This trend is discussed further in Anderson 2015b.

[8] Greenblatt 1980; Howard 1986; Montrose 1992; Gallagher and Greenblatt 2000; Mazzio and Trevor 2000.

demonstrating links to contemporary issues or notions of subjectivity in medieval works.[9] Such have been the ongoing effects of this theoretical tectonic shift that subsidiary turns, even when focused on phenomena such as 'embodiment' or 'materialism' tend to discuss these phenomena purely in terms of discourse, shying away from the hold of matter on human nature. Yet postmodern beliefs are in fact rooted in our capacity to use our bodies, as we do our other resources, without necessarily paying explicit attention to them. Consequently, these theories elide the significance of our actual body in the physical world, and the phenomenological transcendence that the mind, (situated in brain, body and world) affords us.[10]

The remainder of this chapter focuses discussion on specific areas of scholarship, beginning with the history of the study of the mind in the narrowest sense. What constitutes the mind in contemporary cognitive science is a matter of debate, but the debate is not a new one. Though medieval and Renaissance beliefs about the nature of the mind were also contentious, discussion centred on the hard problem of the relation of the mind to individual immortality and the soul (rather than to consciousness per se). Medieval and Renaissance notions of distributed cognition are inflected via Christian belief systems, which can make their concerns seem distant and irrelevant to us today. However, lively – potentially lethal – disputes also encompassed more familiar concerns, such as what distinguishes humans from animals, the role of the emotions, the mind's relation to the body and the nature of perception, mental representations and intentionality. Scholarly interest in medieval and Renaissance beliefs about the mind precedes the 'cognitive turn' in fields such as intellectual history and theology, fuelled by the period's own considerable achievements in conceptualising many issues which continue to be fiercely debated in philosophy of mind and cognitive science to this day.[11] More generally, however, philosophical discussion of the mind often skips lightly from classical accounts to the nineteenth century with few stops in between.[12]

Classical Greek works, in which notions of the mind were already varied and contested, were almost all lost until the twelfth and thirteenth centuries, due to a general decline in knowledge of Greek, so that they remained unavailable or available only indirectly through partial

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[9] See Patterson 1990 or Barrington and Steiner 2014.

[10] This tendency is evident or justified in Callaghan 2001, Elam 1996 and Strier and Mazzio 2006. For further critical discussion of postmodernism's tendency to elide materiality and embodiment see especially Anderson 2015b and Eagleton 2016, or for another related perspective see Bynum 1995a.

[11] Particularly notable early examples stemming from traditional scholarship in this area are Onians 1951 and Godden 1985. Later examples are Pasnua 1997; MacDonald 2003; Wright and Potter 2003; and Haldane 2011.

[12] See, for example, the Stanford Encyclopedia's article on 'Collective Intentionality' (defined as 'the power of minds to be jointly directed at objects, matters of fact, states of affairs, goals, or values') which acknowledges that 'this part of the history of philosophy is largely unwritten', as it skips from Aristotle to Rousseau and German Idealism in a few sentences, before going on to discuss movements from the late nineteenth century onwards in more detail (Schweikard and Schmid).

translations or commentaries.[13] Consequently, though notions from classical antiquity remained influential they became transfused with an array of Judaeo-Christian, Anglo-Saxon and Byzantine notions and study of them up to the Renaissance was concerned primarily with the question of whether and how classical notions might be reconciled with religious doctrines. As is evident from volume 1 of this series, classical antiquity attests the proliferation of a range of notions of distributed cognition that accord a cognitive role to the body and world. The intertwined group of theories that distributed cognition covers are also nowadays together known as '4E cognition', which encompasses embodied, embedded, enactive and extended cognition. The chapters in this volume show that during the medieval and Renaissance period, classical ideas persisted and developed in combination with influences from other traditions, into a rich, wide and diverse array of beliefs about cognition as embodied, embedded, enactive and extended.

The primacy of the body in Hippocratic, Aristotelian and Stoic theories becomes more fraught in Christian models because of tensions concerning the issue of individual immortality and the resurrection, with the earthly body often negatively construed – because of and in spite of its perceived necessity in this life.[14] Medieval and Renaissance beliefs to an extent anticipate the current notion of embodied cognition, because they similarly view psychological states and processes as being routinely shaped in fundamental ways by non-neural bodily factors. Traditional scholarship's presentation of the medieval and Renaissance mind as primarily associated with reason or intellect alone (for example, see MacDonald 2003: 255) arguably derives from modern models of the mind as identical to reason. As contributors to this volume such as L. O. Aranye Fradenburg make clear, as with enactivist notions of the 'deep continuity between life and mind' (Thompson 2007: 128), an affinity was often assumed between soul and mind, terms which were often used as if they were synonyms.[15] Confusion is created, both for medieval and Renaissance thinkers and for us, by this category fluidity, and by the proliferation of different uses of different terms by different traditions and authors.[16] For instance, Godden (1985: 295) observes that Ælfric, Alcuin and Alfred closely associate mind and soul and use the term 'sawl' and 'mod' interchangeably as a name for the intellectual soul,

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[13] The Stanford Encyclopaedia of Philosophy's entry on 'Medieval Philosophy' provides an account of the relative (un)availability of Greek texts.

[14] See discussion of this issue in Anderson 2015b and Haldane 2011: 304. Also see Bynum 1995b: 11 on bodily resurrection: 'a concern for material and structural continuity showed remarkable persistence even where it seemed almost to require philosophical incoherence, theological equivocation, or aesthetic offensiveness.'

[15] Godden 1985: 279; Anderson 2015b; Fradenburg in this volume.

[16] As described in the thirteenth century by Bartholomaeus Anglicus, here given from Batman's translation (1582): 'Also many names of the soule bée so coupled together, so that oftentimes one name is put for another, and the Soule that is one, is called by diuerse names in diuerse respectes' (Bk 3, Ch 5, 13).

while the Anglo-Saxon poets refer to the soul only in relation to death (as does Homer) and use 'mod' more liberally as almost an equivalent to the modern term for mood.

Medieval and Renaissance notions sometimes venture beyond familiar territory in thinking about what it means to describe cognition as distributed. As with the Stoic notions to which those systems are indebted, there was a widespread belief in an intelligent force that extends throughout all of creation, though here it is the Christian God that represents this distributed cognitive force.[17] Throughout the period, the dominant view was that the soul pervades the whole body, with the body a major influence on all, or almost all, aspects of mental functioning during human mortal existence. The pervasive belief, derived from Aristotle and inflected by Neoplatonism, was that the soul consisted of three faculties. The highest intellectual soul was exclusive to humans, the sensitive soul was shared with animals and the vegetative soul was common to all three life forms. This belief again implied a sense of continuity between mind and life and of both continuities and disjunctions in ways of knowing and being that reached across all existence.[18] The world was viewed as a cognitive ecological system that operated across a range of hierarchical levels, through which humans could ascend to a more Godlike apprehension, or conversely descend to the more limited purview of animals. The tripartite faculties of the human soul included the passions and the primary instincts, with bodily and environmental factors held to enable or constitute cognition in both supportive and detrimental ways.

The 'corporeal turn' in mainstream scholarship involved an interest in the effect of sociocultural discourses on concepts of the body, particularly through analyses of medical and anatomical treatises.[19] Yet in most of these scholarly works the body appears only as a kind of prelinguistic 'spoiler' (Gallagher and Greenblatt 2000: 15). Cognitive approaches instead suggest that discourses are constituted by, as well as constitutive of, the experience of the lived body. The co-existence of both differences and continuities between embodied humans, embedded situations and linguistic structures, enables us partially to sense and grasp past

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[17] See Gill (2018), in volume 1 of this series, on Stoic notions and Anderson 2016b on the influence of Stoic notions on the Renaissance and as in some respects anticipating enactivist theories.

[18] See Haldane 2011 (295) or Anderson 2015b for Renaissance examples. Recent works on philosophy of the later medieval period, make clear the extent to which this was a time of innovation and creativity. For instance, Peter John Olivi arguably anticipates extreme enactivism. Olivi critiques Aquinas's notion of inner mental representations and insists that there is no veil between us and the world (Pasnau: 5, 22). Another instance is Bonaventura's attempt to solve the medieval hard problem of the soul-body relation. He adopted the Aristotelian notion of universal hylomorphism, but makes a distinction between extended matter in the spatiotemporal realm, and the soul's non-extensive matter (Haldane 2011: 279). Thus, Bonaventura inverts this period's commonplace that the soul or mind extends more widely than the body, long before Descartes, though in Bonaventura's word-bending theory the soul is in fact a kind of (distinct metaphysical) matter.

[19] Important works include: Laqueur 1990; Sawday 1995; Hillman and Mazzio 1997; Kemp and Wallace 2000.

phenomenologies, rather than there being simply an uncrossable gap. Indeed, my particular amalgam of characteristics and contexts may connect me with some distant 'other' more closely than to a person who is proximate in time or space. I experience history, literature and other forms of culture through my embodied mind and the ways in which it connects me to other people and things in the world – those which are present and those which are past, future or fictional.

Emerging insights on the embodied nature of the mind have inspired scholars to re-examine earlier beliefs about the cognitive roles of the body and the emotions, particularly in relation to humoural theory.[20] From their Western origins in ancient Greece notions of the four humours travelled down via Galen and Islamic medicine and continued to influence medical and philosophical theories into the seventeenth century. The four humours were thought to shape human beings' physical and cognitive natures and were composed of the same four properties as the four elements of which the world was made. In historical and literary studies there has been increasing interest in the ways in which medieval and Renaissance belief in the humours led to notions of a permeability between brain, body and world. Terms that scholars in the past have taken to be merely figurative were actually often intended as descriptions of humans' psychophysiological nature; for example 'hard-hearted' describes the blockage of blood flow that was thought to lead to lack of empathy.[21] As with notions of the soul as connecting us to all aspects of lived experience, and of the spirits which transported the passions around and in and out of the body, the humoural balance was thought to be intimately entangled with the environments in which one was or had been embedded. Belief in these permeable mechanisms and fluid processes was a means to describe and understand why and how people were predisposed to cognitively coopt the world or extend into it. As in the current hypothesis of cognition as extended, the actively adaptive nature of our psychophysiology was understood to 'poise' humans for intimate and dynamic relationships with environmental, sociocultural and technological resources and environments. [22]

Gail Kern Paster argues that lack of recognition of the different character of an emotional experience in Renaissance texts is connected to our failure 'to recognise how the porous and volatile humoural body, with its faulty borders and penetrable stuff, interacts differently with the world than the "static, solid" modern bodily container' (2004: 23). This remark suggests a significant conceptual difference between then and now in terms of bodily and emotional

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[20] For a more extensive overview of embodied cognition in cognitive science see the 'Series Introduction'. For examples of medieval and Renaissance studies of embodied and affective cognition, see Paster 2004; Paster et al. (eds) 2004; Arikha 2007; Pickavé, and Shapiro 2012; Anderson 2015b; Blud 2016.
[21] Rublack 2002. See also Paster 2004; Lockett 2011a.
[22] See Floyd-Wilson and Sullivan 2007 on Renaissance notions of embodiment and environment and see Anderson 2015b on this Renaissance parallel with Clark's (2003) theory of humans being naturally 'poised' to cognitively extend into the world.

experience. Yet it seems likely that both models of the body (as container and as porous) co-exist and relate to different aspects of bodily experience, while the sociocultural and linguistic foregrounding of one model or the other then feeds back into perception of that experience. In the light of distributed cognition, it is evident that what has been perceived as superstition in humoural theories might be reconsidered as an intuitive grasp of the fundamentally enmeshed nature of body and world. This notion of organism-environment coupling holds particularly close affinities with enactivism, which describes cognition as enacted (or brought forth) through continuous reciprocal interactions between an organism and its environment. Postmodern theory instead emphasises only discontinuities, gaps and boundaries. Though often fuelled by laudable political aims, postmodernism ignores the material grounding of existence and our interconnectedness to each other and the world.

In the early twentieth century study of the history of emotions was encouraged by Johann Huizinga, yet his depiction of the later Middle Ages as characterised by 'superabundant emotion' and 'sombre melancholy' was criticised from early on ([1924] 1992: 200, 31). Febvre ([1949] 1973) was one of his critics, though he similarly encouraged historians to turn their attention to the sensibility of a period. While he shared Huizinga's view of the Middle Ages as emotionally volatile, he argued that it was due to harsher living conditions of which Huizinga had not taken due account. Norbert Elias's exploration in *The Civilizing Process* of the role played by 'sociogenetic and psychogenetic' factors in the growth of feelings of 'shame and delicacy' only became influential after its translation in 1969 ([1939] 2000: x, xiii). All these earlier studies have come under criticism for constructing grand narratives that progress towards modern enlightenment.

While study of the emotions is a longstanding field, its reinvigoration has been marked by the emergence of an upsurge of journals, conferences and research centres.[23] Jan Plamper (2012: 22) observes the same longstanding tensions that have emerged more recently in relation to the cognitive humanities, between universalism and evolutionary theorists on the one hand and relativism and social constructivism on the other: 'Since the mid-nineteenth century at the latest, academic discussion of emotion has revolved around these two polarities.'[24] A distributed cognition approach mediates these polarities. The notion of a dichotomy between the natural and cultural can be seen as a non-conscious reverberation of mind and body dualism that a distributed cognition approach counters and complicates – human nature is biologically predisposed to be emotional and cultural, and our experiences of body states and processes are culturally inflected. Scholars on the history of the emotions and in the medical humanities vary

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[23] Matt 2011 and Trigg 2014 reflect on the affective or emotional turn and Trigg self-reflectively considers the role of emotions and emotive language in our disciplinary discourses.

[24] Similar observations of polarities between evolutionary psychologists and universalists and relativists and constructions have been made by Schnell 2004. Rosenwein (1998: 2) also describes a divide between those who view emotions as innate or socially constructed.

in their views and understanding of the cognitive humanities, but in medieval and Renaissance studies these research areas are often already interconnected, perhaps partly since in the medieval and Renaissance period theories about these phenomena substantially overlapped. As the passions flowed in and out of as well as round the body via the spirits there was also a general belief in affective transmission between people and things.[25] In this volume Daniel Lochman and Hannah Wojciehowski explore affective interconnectedness and interpenetration in relation to the concept of 'piercing' in a range of fictional, theological and medical works.

Research on the embodied nature of language in cognitive linguistics was an early influence on medieval and Renaissance studies. Lakoff and Johnson's (1980) work helpfully made apparent that humans tend to conceptualise non-physical domains in terms of physical ones. As with the influence of evolutionary psychology, from the late 1980s on, views such as Lakoff and Johnson's led to the kinds of universalising claims in early cognitive linguistics and literary studies that we have already heard mention of in relation to studies of emotion. Cognitive linguistics has since evolved with more recent studies taking a more sophisticated account of geographical and historical variables.[26] Nonetheless, even bearing in mind variations in our particular bodies, and in sociocultural and linguistic conventions, the role of embodiment in language creates deep chords that resonate across time and move us. Such theories, as Harbus (2012) describes in her volume on Old English Poetry, help to 'account for how twenty-first-century readers are able to create meaning from literary texts that are over one thousand years old' (22). Another influential theory in this area is conceptual blending, Fauconnier and Turner (2002) use the term 'blending' metaphorically to refer to the integration of aspects of two or more input mental arrays to create a new mental array, and they argue that conceptual blending is a basic human cognitive capacity. Common to both theories is the notion that both mundane and abstract concepts ultimately emerge from our everyday embodied experiences, and that these concepts in turn shape our everyday experience of embodiment.[27] Yet the dichotomy between nature and culture continues to reappear in recent cognitive linguistic and literary studies. For instance, Harbus (2012: 19) describes the 'analysis of literary meaning-making' as occurring 'via the tension between embodied universals (biology) and contextual variables (culture)'. Nature is presumed to be universal and unchanging and culture relative and dynamic, when both nature and culture – through their entanglement and their own hybrid traits – contain elements of change and constancy. Our natural and cultural adaptability endures. Distributed cognition grasps, and is a vital component of, this seeming paradox.

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[25] Rowe 2014; Anderson 2015a, 2015b, 2016b.

[26] See, for example Lakoff and Johnson's (1999) own later take on cultural and temporal diversity or Glenberg and Kaschak (e.g. 2002, 2003).

[27] See as examples of literary, cultural and historical studies using these methods: Crane 2001; Holsinger 2001; Bradshaw et al. (eds) 2005; Cook 2010; Lockett 2011a; Harbus 2012; Kern-Stähler et al. (eds) 2016; Booth 2017.

The ways our minds are inflected by experience, including learning and using language, can more accurately be understood when we acknowledge the array of structures and the two-way nature of processes involved. Language does not construct cognition in a top-down, one-way relation, as postmodern models reductively imply. Language emerges from embodied humans' interaction with both natural and sociocultural environments and is both constituted by and constitutive of cognitive experience in spiralling developmental loops. Medieval and Renaissance texts variously describe language and literature as enabling or as fundamentally formative. Texts were referred to as intellectual offspring, as constitutive of the mind and subjectivity, and as quasi- independent minds and subjects. Language is also described as another perceptual modality, a putative sixth sense; yet it was also considered an unreliable, unruly and feminine asset, perhaps less trustworthy than bodily gestures and facial expression in overcoming the distance between inner and outer. The disputes that have emerged between some current embodied and extended mind accounts about whether or not the body plays a special role in cognition (Clark 2008) were already at issue in the medieval and Renaissance period, with anxieties that the unruly spirits, humours and passions pollute cognition, which in turn led to human language being depicted either as providing a means of mediation and ascension, or as itself problematically implicated by the Fall.[28] Uncertainty about the role of linguistic representations versus the role of physical means of expression to an extent anticipates modern debates about the role of language versus the role of the body in forms of cognitive extension.

Cognitive poetics, which emerged from formalist and structuralist roots, has also been an influential area from early on in the development of the cognitive humanities. Reuven Tsur (1992), who coined the term, seeks to distinguish it from the other kinds of approaches mentioned above. Tsur defines cognitive poetics as a method that strives to explain, rather than merely categorise, cognitive effects through analysis of the structures of literary works. Other thinkers have been more open to considering how to incorporate cognitive linguistic approaches into cognitive poetics (see for example, Stockwell 2002). More generally, cognitive narratological approaches, which share in those roots, have been slower to develop in medieval and Renaissance studies primarily because conventional notions of narrative that focused on formal features, such as the narrator's role, biased attention towards later periods. However, cognitive approaches have helped to bring into question traditional definitions of narrative, shifting the emphasis to the ways in which cognitive and phenomenological features constitute a narrative. Important here has been Monika Fludernik's redefinition of narrativity in terms of experientiality, with the only requirement being 'a human (anthropomorphic) experiencer of some sort at some narrative level' (1996: 9). Fludernik's call for a diachronic approach to

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[28] Further discussion of current theories is provided in this volume in chapter 1. Discussion of this topic in both current and Renaissance thinking is given in Anderson 2007, 2013 and 2015b particularly.

narrative studies also marks recognition of the need to shift away from an ahistorical approach (2003). [29]

Nonetheless, diachronic studies such as David Herman's edited collection *The Emergence of Mind* (2011) and a special issue on social minds in *Narrative* (2015) remain exceptional. The inspiration for the social minds special issue was Alan Palmer's pioneering works (2004, 2010), which draw on a range of cognitive scientific concepts, including Daniel Dennett's notion (1996: 34) of humans as routinely adopting an 'intentional stance', which involves treating 'an entity as an agent in order to predict its actions'. It is an *as if* mechanism in that what it means for someone to have a particular belief is for her behaviour to be explicable and predictable if we attribute that belief to her. Dennett further proposes that the habit of adopting an intentional stance covers both other- and self-interpretation (120). Palmer (2004: 178) argues that the reading process involves a similar, but linguistically based, attribution of minds to characters, which then acts as an embedded narrative. The human propensity to attribute mental properties to ourselves and to others has also been discussed in terms of 'theory of mind', which often wrongly tends to be associated only with later periods than we deal with in this volume.[30]

In the special issue on social minds, Eva von Contzen (2015: 140) employing a dualist notion of cognition questions the need for Palmer's notion of social minds to understand medieval literature when 'experientiality is tied much more to acting than to thinking (and its cognitive bedfellows)'. Yet Palmer himself (2004) urges that categories of thought ought not to be restricted only to those which fit speech category forms, in order for it to become apparent just how much of our thought, and our identity, is social and distributed. And while the transition from medieval to Renaissance society is often demarcated in terms of a shift from the collective to the individual, notions of collective experientiality and social cognition remain widely evident in the Renaissance.[31] Daniel Hostert's chapter (2015: 170) examines two factual narratives 'in which experience is depicted as shared and cognition emerges as intermental', while Anderson (2015a) focuses on evidence in Renaissance fictional and factual narratives of the concepts that a multiplicity of cognitive agencies can operate in a single human, and that multiple people can form a single cognitive agent. In Cynthia Houng's chapter here this notion of the intermental is explored through an examination of the creation of art in Italian Renaissance workshops: the collaboration of multiple people on drawings collectively produces an artwork, with the adoption of a master's style a way of assuming his mindset.

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[29] Ryan (2001) has also been particularly influential in terms of this reframing.

[30] Palmer (2010:5-6) describes it arising in the early nineteenth century, while Liza Zunshine's work (2006) argues that readers use theory of mind to understand characters in novels and that it is theory of mind that motivates our reading of novels

[31] This goes back at least as far as Burckhardt and Huizinga, though Huizinga disagreed about the emphasis placed on Italy by Burckhardt (Huizinga [1924] 1992: 69-70).

Recent enactive accounts, by Shaun Gallagher and Dan Zahavi (2008) or by Gallagher and Daniel Hutto (2008), argue that we do not commonly think about other minds by using internalised theories about the nature of the mind (Theory Theory) or mentalizing simulations (Simulation Theory). In preference to these two competing ways of unpacking theory of mind, they instead make a case for interaction theory. Interaction theory posits that our intentional capacities are grounded in early developmental capacities to grasp other's intentions through facial and bodily gestures and actions (primary intersubjectivity) and motor resonance systems (secondary intersubjectivity). These intersubjective capacities are then developed via scaffolded narrative practice that enculturates us in the norms of our sociocultural context. In his chapter Jan Söffner examines how interaction theory is at play in *commedia dell'arte*. At the same time, he places in question both Renaissance studies' focus on humanism as a catch-all for understanding Renaissance culture and cognitive literary studies' adoption of theory of mind as a catch-all to understand our social cognitive capacities.

Already in medieval philosophy we encounter the idea of the material environment as fundamental to cognition: Ockham, for example, anticipates the notion that 'intentional content can be carried by materially realized operations' (Haldane 2011: 303). There are variations in whether as in the case of embedded cognition an external resource acts as a non-cognitive aid that enables a thinker to achieve the thought or task in hand, or as in extended cognition the resource is itself counted as part of the cognitive system. The increasing importance of material culture to religious practice between the twelfth and sixteenth centuries has been highlighted by Caroline Walker Bynum (2011), who argues that the increasing number of pilgrimages to places that displayed material objects, which were believed to perform miracles, was linked to shifting notions of materiality. In this volume we see how the significance of materiality plays out in Chaucer's *Canterbury Tales*, as Guillemette Bolens explores the ways in which the material possessions of the pilgrims, along with their embodied actions and narratives, are used to define characters' mental dispositions. Other works of traditional scholarship such as Chris Woolgar's works (1999; 2016) on medieval material culture in everyday life or *Subject and Object in Renaissance Culture* (de Grazia et al. (eds) 1996) explore the ways in which material goods and transactions instantiate notions of self; this is a topic taken further here in relation to distributed cognition, in particular in Raphael Lyne's chapter, which explores how Ben Jonson depicts characters as 'soft selves' (Clark 2003: 139), ad hoc assemblages, situated in the cognitive ecology of the marketplace, in relation and contrast to which they attempt to fashion themselves.[32] Elizabeth Elliott's chapter, for its part, explores the use of place and

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[32] See also Jones and Stallybrass 2000 on clothes' role in self-fashioning and their mnemonic-bearing capacity; Anderson 2007 on how changes to the technology of the mirror interacted with its use as a concept for socially extended cognition and as compared with the use of the book for textually extended cognition; and Sawday 2007 on relation of Renaissance culture to the rise of machine

everyday situated activities in the *Flyting* of lowland Dunbar and Gaelic-speaking Kennedy, demonstrating how through the collaboration, circulation and reception of their poetic invective the dynamic nature of Scotland's cultural ecology is constructed as part of a distributed cognitive system in which diverse voices and cultures co-exist.

A similar representationally hungry drive sparked theatre's rise according to Ellen Spolsky (2007) who argues that Protestant iconoclasm and the transition from the more sensory and ritualised Catholic forms of worship centred on the Mass created this 'cognitive hunger' (a term borrowed from Clark). This transition to the Protestant emphasis on recall, sermon and book-centred worship is traced by Evelyn Tribble, who describes the mnemonic work of the sermon as distributed between the preacher, who was to use headings and subdivisions to ease recall, and his congregation, who in turn would use these to recreate the chain of reasoning (2005a). As Mary Carruthers (1990) has shown, technologies to aid shared memory were also common in medieval sermons. For example, we can find the trope of the chain of reasoning in use as a medieval manuscript border illustration, with a depiction of fish (symbolising Christians) that form the chain being drawn by memory hooks (332).[33] Carruthers has also collaborated with neuroscientist Yadin Dudai (2005) to demonstrate that in both medieval and current neuroscientific models memory is understood as an active participant in cognition. The art of memory was another customary means of scaffolding the mind throughout the period. In *The Art of Memory* (1966) Frances Yates traces the use of memory theatres from Greek antiquity into the Renaissance: this involved linking a sequence of information to a sequence of places or features within a building or memory theatre, so that you could then recall the information by visualising the architecture (see also Carruthers 1990). John Sutton persuasively argues that such systems 'are cognitive even though they are not, in a straightforwardly ancestral way, natural and biological; and they are extended even though they are not literally external' (2007: 26).[34] Mnemonic systems demonstrate that factors that we often conceive of as the products of exclusively internal mental processes also use both external and internalised cognitive resources.

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technology. Another new field in material culture is Object Oriented Ontology, that explores notions of agency in relation to nonhuman objects; see for example Cohen and Yates (eds) (2016: xiii), who combine 'thing theory' as it is also known, with the environmental turn to explore 'the ethics of human enmeshment within an agentic material world'. Distributed cognition does not necessarily view the resources in the environment as independent agencies though medieval and Renaissance theories sometimes did argue for a kind of vital animism.

[33] As a further illustration, a medieval *catena* (chain) was a collection of gospel commentaries each introduced by the author's name and with opening and closing words altered to make them form a continuous chain; Thomas Aquinas's memorising of key authorities led to his *Catena aurea* manuscript (*Golden Chain*).

[34] See also Busse-Berger on the art of memory and music (2005) and Wilder on the art of memory and theatre (2010).

More generally, theatre studies have been quick to grasp the ways in which cognitive approaches might inform our understanding of theatrical performance and spectating because the enmeshed nature of language with physical and spatial dynamics are highly salient in the world of the theatre.[35] Evelyn Tribble in her ground-breaking paper and subsequent book (2005b, 2011) on memorisation in the Globe theatre argues that, to cope with the mnemonic load of performing up to 6 different plays a week, methods of distributed cognition were used by players and writers. The plots, scenario instructions which hung from the tiring house, acted like two-dimensional maps to get actors, who only had copies of their own individual parts, into the right places as a means to trigger the correct lines, and more experienced players guided novices aided by embedded instructions in the text, such as when to get on and off stage (see also Stern 2009). Miranda Anderson (e.g. 2007b, 2015b) has since shown that practices of extended cognition are manifest in many aspects of Renaissance society. Furthermore, she demonstrates that these practices are accompanied by both nonconscious and explicit expression of notions of distributed cognition across a wide array of domains, including scientific, medical, philosophical, theological, technological, historical and literary works, with variant forms of notions that resonate with current embodied, embedded, enactive and extended cognition circulating widely.[36] In this volume Julie E. Cumming and Evelyn Tribble expand on Tribble's earlier thesis about the theatre to examine the ways in which the mnemonic and creative capacities of singers and dancers were enabled by an array of material, social, bodily and neural resources, and as with Söffner they highlight the importance of improvisation. In her chapter Clare Wright uses the fifteenth-century York *Play of the Crucifixion* to demonstrate the ways in which pageants act as cognitive niches (Wheeler and Clark 2008; Menary 2014). We create physical, social, epistemic and cultural resources and environments in order to endow ourselves with enhanced cognitive capacities.

Another central means of enhancing human cognitive properties came about through the widespread shift from orality to literacy and from manuscripts to printing that occurred during the period this volume covers. Medieval and Renaissance minds, and notions of the mind, were transformed by the gradual movement from orality to literacy and to increasingly text-based knowledge systems, which enabled the emergence of new forms and theories of distributed cognition. Our use of 'mind tools', psychologist Richard Gregory first argued, is what makes us human, with language a special mind tool, since language is a fundamental part of the human cognitive repertoire that makes possible the initial concretisation and communication of an

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[35] Spolsky 2007, McConachie 2008; Stevenson 2010; McGavin and Walker 2017.
[36] Anderson uses the term 'extended mind' in her book (2015b) in the same way as distributed cognition is used in this book as encompassing the diverse 4E perspectives. See the series introduction in this volume or the introduction in Anderson (2015b) for discussion of variations in the uses of the terms.

idea, enabling us to navigate in the world and to construct higher level concepts.[37] Philosopher Andy Clark describes the 'architecture of the human mind' as 'altered and transformed' by 'the historical procession of potent cognitive technologies that begins with speech and counting, morphs first into written text and numerals, then into early printing' (2003: 4). The cognitive effects of these changes are so evident they already pervade discussion in traditional scholarship on the history of the book. H. J. Chaytor's *From Script to Print* (1945) on the effect on medieval literature of scribal methods was followed by M. T. Clanchy's ([1979] 1993) *From Memory to Written Record*, which comments that 'literacy in itself is primarily a technology' and 'is unique among technologies in penetrating and structuring the intellect itself' (7, 85). Walter Ong's work on *Orality and Literacy* ([1982] 1991) is renowned for its emphasis on the effects that writing has had on humans – and notably, these effects are not only apparent in the use of written scripts. Through its internalisation as a structure, writing also inflects literate human beings' forms of thought and speech:

> Many of the features we have taken for granted in thought and expression in literature, philosophy and science, and even in oral discourse among literates, are not directly native to human existence as such but have come into being because of the resources which the technology of writing makes available to human consciousness.[38]

The same is arguably true of our legal structures: in his chapter on this topic, Werner Schäfke considers how modern concepts of distributed cognition can aid us in understanding medieval Icelandic law's development from oral to textual forms. He focuses on how the *Grágás* manuscripts function as a form of cognitive device that guides beliefs and behaviour by providing applicable laws and legal norms. More generally, distributed cognition enables a new understanding of taxonomies (including those adopted by academic disciplines): they are forms of affordance that manifest salience in the world.[39] Theoretical approaches emerge out of the

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[37] Gregory 1981. See also Dennett 1997; Clark 1998, 2008.

[38] Ong [1982] (1991): 1. See also Goody 1987; Moss 1996, 1998; Blair 2003; Sherman 2008.

[39] The term 'affordance' derives from Gibson (1979: 127): 'The affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill. The verb to afford is found in the dictionary, the noun affordance is not. I have made it up. I mean by it something that refers to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment.' How we perceive the affordances in our environment depends on our particular bodies and histories – for a hippo a pool affords a cooling wallow; for a waterskater a surface to glide over; a scubaspider goes further in its organism-environment interaction – it creates an airbubble using fine hairs on its body in order to be able to dive for its prey (cf. di Paolo 2009); in the same way it can extend its biological properties human extend their cognitive properties via organism-environment interactions e.g. using language to label, navigate and conceptualise the world, thus to a human 'pool' can identify in language a particular kind of watery entity and conceptualize the notion of 'a group' or 'to merge together'. Humans shape not only their physical, but also their linguistic, sociocultural and virtual environments, as well as being shaped by them.

expression of human cognitive properties in relation to pre-existing conventions and shifting contexts. Consequently, even traditional theoretical approaches to medieval and Renaissance studies are themselves evidence of distributed cognition, as is the material which is their object of study.

The spread of the printing press began 'to refashion the mental world of Europeans' via the transmission of old knowledge and new means of information storage and retrieval.[40] Medieval and Renaissance belief systems provide evidence of an understanding of the mind (and self) as using textual and social systems to extend cognition externally, as well as through internalizing mnemonic or linguistic structures. In a spiralling developmental dynamic, the transition from orality to literacy and from manuscripts to printed texts led medieval and Renaissance thinkers to be alert to the ways in which textual media could transform their cognitive range, through providing feedback loops for the development of their own thoughts, extending their spatial and temporal reach and enabling them to access the minds of others. Writing became understood as a kind of external memory system, which could then be circulated and collaboratively contributed to as a kind of socially extended cognition. Anderson (2007b, 2015b, 2016a) explores how creating and engaging with books, literary works and performances, were understood to enable critical and imaginative thinking that reaches beyond the constraints of the individual mind, via incorporating another's experience as one's own or sending one's thoughts soaring, such that they became capable of decking out a theatrical stage and ascending to heavenly heights of apprehension and invention (see, for example, *Henry V*: Prologue). The extension of individual and social cognition by means of writing is a theme explored in this volume by Pieter Present's chapter on Robert Hooke and other Royal Society members' division of cognitive labour via the use of this external 'repository', a word Hooke also uses for the brain. Research on the history of the book, with its emphasis on the ways in which cognitive capacities are transformed through these developments, anticipated and consequently can be embedded in the more general insights that distributed cognition offers the humanities about the continuous and reciprocal dynamic that exists between organism and environment, which encompasses all the human realms, from the physical, environmental and technological, to the sociocultural, textual, fictional and virtual.

As we have seen, this distribution of cognition was understood to operate in the conceptual as well as the spatiotemporal realm. Conceptual categories are hybrid, relating to our onboard cognitive structures and to structures in the perceived world. Imagery affords understanding, as Grosseteste explains: 'Without material forms and figures, and without phantasms, we shall

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[40] Rhodes and Sawday 2000: 6; see also Elizabeth Eisenstein's *The Printing Revolution in Early Modern Europe* which describes the printing press's widespread and metamorphic effects on 'cerebral activities' (1983: 261). Many more works could be mentioned here but I focus on those that engage with the cognitive ramifications.

(eventually) contemplate the divine and intellectual beings … yet we shall not be able to attain to this contemplation unless we first use both uplifting forms and figures.'[41] So here is propounded the need to use the tropological resources of language to approach higher understanding. Traditional works on rhetoric and literary criticism provide a wealth of examples that that remark on and illustrate these resources, but distributed cognition more keenly grasps the nature and significance of language's capacity to transmit embodied and embedded experience. In tracing such capacities, the chapters in this volume create a sense of the extraordinary power of language – and particularly literary language – to extend the mind beyond its usual conceptual capacities. Hannah Burrows, for example, explores the use of a system of kennings, which are compound words with a metaphorical meaning e.g. '*svanvangr*' ('swan-plain' = sea), as assisting memorisation and as produced by, and productive of, new thoughts in Old Norse culture (p.000).[42] Where earlier cognitive linguistic models tend to suggest atemporality and inert absorption of conceptual metaphors, a distributed cognition approach suggests an evolutionary dynamic to language, style and genre formations. So though traditional scholarship has already been unwittingly grappling with notions of distributed cognition that were manifest and circulating in medieval and Renaissance culture, the theory of distributed cognition, like Grosseteste's forms and figures, itself is a conceptual affordance that allows the significance of these ideas, and the connections between their expression in different areas of culture, to come more clearly into view.

Literature acts as a representational domain for exploring this world and other possible ones, via imagination's capacity to flesh out the words on a page, or through an acted play literally bodying it forth in surrogate physical forms. As Harbus discusses, intentionality goes two ways, with authors also making inferences about their readers' minds: 'what sort of mental operations were anticipated by creators or literary texts, especially those involving a high degree of imaginative and creative work on the part of the recipient?' (2012: 19). Arguably, both art and literary works act as forms of perceptual, affective and sensory extension that enable the transposition of the self via the stimuli conjured by the work into an alternative realm and higher level of cognitive comprehension. Literature is a mind tool, and though as with any tool its ends may not always be virtuous, the very means by which it operates, such as widening one's conceptual range and enabling more vivid insights into other minds, necessarily tend to the improvement of the partaker. Trompe l'oeil parapets and identification with figures in a painting (Williamson 2007), like narrative frames, figurative language and identification with characters in a literary work, were thought to scaffold ascent into cognitive flights beyond the everyday realm. The richly and consciously constructed nature of fictional narrative is

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[41] Grosseteste quoted in Minnis and Scott (1985: 169). For Renaissance examples of these phenomena see Anderson 2015.
[42] For literary use of language as a special kind of mind tool or affordance see particularly Anderson 2007b, 2015a, 2015b; Cave 2016, Anderson and Iversen 2018.

particularly proficient at extending one's existing cognitive repertoire, as the reader brings forth a narrative and a narrative brings forth a reader as it plays out across and recalibrates the particular nature of each mind (Anderson and Iversen 2018). Guillemette Bolens (2012: viii) has highlighted the importance of kinesis (motion) to constructing meaning. In the same way that objects and bodies trigger our perception of them as affordances, textual references to objects and bodily movements 'trigger sensorimotor perceptual simulations in the reader'. She explores this topic further in her chapter here.[43] Our cognitive modelling of narrative is to an extent grounded in the way we model the world; for example, as Jajdelska and colleagues argue, the description of the Prioress's face in *The Canterbury Tales* leads to a vivid experience not of the face but of the narrator's perception of it; the most vivid narratives are often imitative of the salient features of our cognitive processing, rather than of the referent's objective dimensions.[44] In this volume Kate Maxwell re-examines the close relations between mind, body and book in medieval culture, in this case in relation to the music book *Livre de Fauvel*, in order to demonstrate the active role of readers in reconstituting its multimodal nature.

To sum up, distributed cognition's more encompassing and inclusive notions of the mind as grounded in the world invite us to question notions of mind and being human in our interpretation of other periods, as well as our own. Febvre's criticism of the attempts to use psychological insights to inform historical study was based on the atemporal psychology of his own period ([1949] 1973: 19). His demand for a historical psychology has finally been fulfilled and surpassed by distributed cognition, which is sensitive to the complex, diachronic and dynamic nature of human beings and our relations to the world. Some philosophers and cognitive scientists are already alert to the potential consequences of their theories for all sectors of society:

> This is a confrontation long overdue, and it is one with implications for our science, morals, education, law, and social policy; for these are the governing institutions within which we – the soft selves, the palpitating biotechnological hybrids – must solve our problems, build our lives, and cherish our loves. (Clark 2003: 139)

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[43] See also the recent edited volume by Kathryn Banks and Timothy Chesters on 'kinesic intelligence' (2018). Raphael Lyne (2011) and Philip Davis (2007) discuss Shakespeare's ability to seemingly capture cognition in motion, while Davis also explores his use of 'functional shift' (the use of one part of speech as another, such as the noun turned verb 'godded'), which Davis has shown causes a heightened neural response (97). Sarah Brazil's forthcoming book, *The Corporeality of Clothing in Medieval Literature: Cognition, Kinesis, and the Sacred*, uses the notion of kinesis to approach a new understanding of the role of clothes in cognition.

[44] Scarry 1999; Kosslyn et al. 2006; Jajdelska et al. 2010.

Febvre further identifies the need for 'a wide-ranging, massive, collective enquiry', such as our collaborative effort here aims at (26). Recasting traditional approaches in the light of insights into the distributed nature of cognition enables us to perceive earlier notions of the holistic grounding of human nature in the world. A distributed cognition framework takes account of and explains our diversity and our sharing in a range of sociocultural and biological characteristics across time, illuminating the impact of the cognitive niches that we occupy and create on human nature and our understanding of it. Distributed cognition provides an expansive characterisation of the ways in which brain, body and world may work together in shifting and subtle partnerships that constitute and structure cognition, enabling us to fruitfully draw out these various interrelated and competing strands in historical works, as the chapters that follow richly and diversely reveal.

The Chapters in the Volume

The fourteen chapters that follow illuminate notions and practices of distributed cognition in medieval and Renaissance thought and culture. Given that many of the texts and practices discussed here have influenced later European thought and culture, this book reveals vital stages in the historical development of forms and notions of distributed cognition. There are chapters exploring this theme that focus on developments in Iceland, Scotland, Italy, France and England, as well as more general chapters on European culture. The contributors represent an array of disciplines, with literary scholars having contributed the most chapters overall, due to the breadth of literary studies as a discipline and its pioneering interest in cognitive approaches to the humanities. The aims with which we presented participants in the research project from which this volume derives were either to consider the ways in which medieval and Renaissance sources might be regarded as representing approaches that in some way prefigure modern theories of distributed cognition, or to explore the ways in which these modern theories cast new light on medieval and Renaissance phenomena, or the traditions through which they have been interpreted. A further aim is to demonstrate, and to stimulate wider critical investigations on, how approaches to distributed cognition in philosophy and cognitive science can inform, and be informed by, medieval and Renaissance culture, through making evident the constraints and capacities of past and current definitions and debates. The chapters directly engage with the various models in modern philosophy of mind and cognitive science which challenge standard models that view the body and the environment as peripheral to an understanding of the nature of cognition. The intention of the volume is to indicate through this wide range of topics what a future field of cognitive medieval and Renaissance studies might entail and encompass, the potential significance and breadth of its reach.

A significant theme that emerges is the ways in which distributed cognition reinvigorates our understanding of the nature of judgement, through making more apparent its grounding in oral,

textual and material culture. Various forms of judgement are examined by the three opening chapters, including the legal, the cultural and the everyday kind. The first of these chapters focuses on how the general notion of 'mental institutions' (Gallagher and Crisafi 2009), can be related specifically to medieval Icelandic law book *Grágás* as it is contained in the Staðarhólsbók and Konungsbók manuscripts (Chapter 3).

Werner Schäfke re-examines the gradual movement from oral practices to the use of law treatises in the light of Gallagher and Crisafi's claim that legal processes both produce cognition, by generating judgements, and are produced by cognition, in that they are the outcome of many previous judgements. In a more official way than other texts, legal treatises both represent and create normative beliefs. Judgement is often considered to be a particularly abstract and internal aspect of human cognition, yet it is a cognitive process that is shown to be extended across social and textual domains. In addition, the organisation of Konungsbók and Staðarhólsbók reveal different ways of thinking about how individual judgements relate to more general principles. For example, unlike modern legal treatises which organise matter under a general topic, such as 'homicide', Konungsbók, associatively accretes articles 'in a way that it is accessible for a norm seeker that has a specific factual situation in mind, and not a broad topic' (p. 000). Staðarhólsbók, similarly gives a preference to 'the demands of practice over providing an encyclopaedic overview' but it also adds further forms of textual scaffolding, such as tables, to lighten the cognitive burden on the reader of finding the requisite material.[45]

The following chapter reflects on the ways in which the less formal judgements of everyday society are playfully exposed, explored and triggered by Chaucer's *Canterbury Tales* (Chapter 4). In this chapter Guillemette Bolens takes her ideas about the significance of kinesis (motion) further than in her previous works. Drawing on neuroscientific and cognitive scientific research, she describes movement as the cause of our having a brain. Bolens then goes on to claim, as does interaction theory, that culture can be understood as a means whereby 'to convey dos and don'ts' and to 'control actions by means of tangible and intangible manifestations (e.g. explicit written laws and implicit social rules)' (p.000) Consequently culture, as Bolens explains, helps to 'turn a psychophysical niche into a society, that is, a large-scale relational environment' (p.000). The more specific focus of the chapter is on the role that telling stories plays in terms of creating behavioural norms and sharing knowledge, and the ways in which it draws on our embodied experiences, causing us to mentally simulate narrated actions and interactions. Also tackled by Bolens in this chapter is the significance of the specificity of a cultural affordance, such as the longbow, of the idiosyncrasies of the intradiegetic storytellers and of the peculiar fact that they are all on horseback. The chapter culminates in discussion of

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[45] Schäfke, this volume, p.000; cf. Riggsby's chapter in volume 1 of this series (Riggsby 2018) on the ways in which the use of tables is an organisational strategy that has to be learned and embedded in a culture.

how all of these factors relate to the stories that the pilgrims tell, which themselves are cognitive affordances.

Judgement in the next chapter comes in the form of the poetic *Flyting* of William Dunbar and Walter Kennedy (Chapter 5). Elizabeth Elliott demonstrates that rather than the exchange of insults being simply divisive, the airing of cultural tensions between Dunbar's lowland English-language heritage and Kennedy's highland Gaelic heritage is a creatively and publicly collaborative way of thinking together about Scottish identity, that scaffolds public debate through the use of embodied and situated cues in the constructed environment. The 'holistic function' of the poem, Elliott argues, can therefore be read not as aiming to homogenize or reduce diversity as its outcome (p.000). When read in the light of extended mind theories, the poem instead can be seen as functioning to give voice to the animated complexities in play that together form a vigorous cognitive ecological system.

The transformative capacity of poetry is also explored by Hannah Burrows (Chapter 6). Burrows examines how Old Norse myths about skaldic poetry illustrate the Norsemen's perspective of it as a 'mind-altering' substance that enables new modes of thought. This transformative capacity arises partially from its socially distributed nature and partially from its very complexity – for example, the cognitive work that is necessary to compose, memorise or interpret the kennings – such that skaldic poetry, as Burrows argues, forms a specialised 'cognitive niche' that enabled them to 'develop new, culturally endowed, cognitive capacities'.[46] First-wave models from cognitive linguistics, as Burrows shows, only partially capture the dynamic, since Old Norse descriptions suggest that poetry 'is not a cataract, but rather a catalyst for the mind' (p.000). Burrows reveals both that modern concepts of distributed cognition can aid us in understanding how a poetic form works and that similar notions to distributed cognition are embedded in their conceptualisations of poetry and poets.

A further set of chapters explores the relation between current notions of distributed cognition and several forms of medieval and Renaissance drama. The first of these chapters considers the relevance of various distributed cognitive models of social interaction to medieval drama (Chapter 7). Clare Wright critiques the notion of 'mental institutions' for its claim that they 'are produced in specific times and places' (Gallagher 2013: 6). Wright argues that the phenomenon of medieval drama demonstrates that this is too rigid a definition, because of medieval drama's occasional nature and potential occurrence in a range of everyday settings, such as marketplaces, rather than in a specially designated place, such as a theatre. Therefore Wright argues that notions of a 'cognitive niche' (Clark 2006; Wheeler and Clark 2008) or 'cognitive integration', which claims that distributed cognition arises out of the co-ordination

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[46] Clark 2006; Menary 2013: 27 qtd by Burrows (p.000)

of complementary contributions made by neural, bodily and environmental vehicles to the overall cognitive system (Menary 2007, 2013), can better provide new insight into the diverse array of ways, such as the use of everyday sites and the emphasis on embodiment, through which spectators' holistic experiences of the performance of medieval drama are scaffolded.

The marketplace is an even more central focus in Raphael Lyne's chapter, which examines it as a form of cognitive ecology, in relation to which characters in several of Ben Jonson's works attempt to define themselves (Chapter 8). Lyne draws on seminal works by Ed Hutchins and Andy Clark amongst others as a means to consider how a distributed cognitive approach changes one's understanding of the nature of the self. Since distributed cognition posits a dynamic brain-body-world relation it transforms the ways we conceive of subjectivity or the self. As we have seen, the medieval and Renaissance period's beliefs about human beings involved notions of a psychophysiological-environmental porousness and fluidity akin to current notions of agent-environment coupling. In conventional scholarship and in Renaissance works, subjectivity or the self emerges as a focus, in part due to the widespread religious and political unrest, and in part due to burgeoning literacy and wider travel, but such scholarship does not fully grasp the extent of or the evidence about Renaissance notions of organism-environment coupling due to its focus primarily on a postmodern-influenced concepts of fashioning of subjects by sociocultural forces. Yet neither cognitive couplings nor generative or receptive cognitive interactions are necessarily positive, which places in question the optimistic tendency of cognitive scientific hypotheses towards viewing distributed cognition as typically beneficial (Anderson 2015a, 2015b). Building also on earlier works on material cultures, Lyne demonstrates in his chapter that in Johnson's plays both morality and immorality can prosper through a cognitive ecology that involves dynamic relationships with material goods.

The particular object that Jan Söffner focuses on in the next chapter is the mask of Italian *commedia dell'arte*, in terms of its orientation of bodies and behaviour and as an important element in *commedia dell'arte*'s acting praxis.[47] Building on his earlier work (2004), Söffner focuses on enactive models of presence and interaction. After critiquing conventional interpretative models of masks as tied up with identity, and as either a means of self-display or self-loss, he instead argues for an agency-centred interpretative model of bodily and stage dynamics: 'A mask can lead to a state of acting in bodily presence, without the awareness of presenting one's self to the gaze of others – and so, the experience of shame and interactive self-reflection must change in turn' (p. 000). He examines *commedia dell'arte*'s *canovacci*, which are designed to produce unpredictable situations in which players must improvise

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[47] Cf. Peter Meineck's chapter in volume one of this series (2018), which analyses ancient Greek dramatic masks as enactive and affective vehicles.

actions, rather than merely represent formulaic scripts. In his account, the interactional dynamic we see at play in *commedia dell'arte* functions as a case study that is indicative of the general need for a more embodied view of cultural analysis grounded in the insights of enactivist phenomenology. Further analysis is needed, Söffner argues, of how an enactivist phenomenological approach can open a reading of sixteenth-century Italian Renaissance culture as more improvisationally oriented and body-led than has been suggested by other scholarly methodologies and by a too dominant focus on Renaissance humanist models.

Attention shifts in the following chapter to the visual arts' practice and notions of distributed cognition, after which a further two chapters explore our theme in relation to music and the arts more generally. Cynthia Houng turns our gaze to the practice of drawing in the Italian Renaissance (Chapter 10). The kind of continuous exploratory sketching encouraged by Cennino Cennini in the late fourteenth century becomes central to artistic practice by the sixteenth century. Houng argues that the role of wider availability of paper in producing new drawing practices can be informed by Alva Noë's argument in *Strange Tools* (2015) that our organisation by technologies leads to the emergence of new cognitive modes – Noë's further argument is that, like philosophy, the arts (the titular tools) reveal the ways in which we are already being organized. Alongside the persistence of classical views 'of the hand as being both a tool and a mode of thought' (p. 000),[48] when considered through the lens of Andy Clark's (2003) use of sketching as an example of 'scaffolded thinking', in which environmental props and the non-neural body can enable the brain to achieve what would otherwise be difficult or impossible, it is clear that the rise of drawing's centrality does not simply represent a shift in workshop or artistic practice. The term *disegno*, as Houng explains, exemplifies the enmeshed nature of idea and practice, for it signified both design and drawing. Drawing is a way of 'thinking with the hand'. Furthermore, Clark's notion of scaffolded thinking is in turn expanded in scope through its examination in the context of Italian Renaissance workshop practices. Learning to draw in a workshop, apprentices copied nature, antiquity and contemporary masters, with the latter a means to 'embody the master's hand' and assimilate 'the workshop's particular cognitive style' (p.000). In addition, Houng, describes how the circulation and addition to drawings by multiple hands acted as a means, not just of communicating, but of collaboratively creating concepts.

Expanding on existing work on the history of the book and the memory arts, Kate Maxwell explores the significance of medieval and Renaissance descriptions of the book or word as flesh which through its consumption transforms the reader (Chapter 11). Rather than being an

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[48] Of possible relevance here is Courtney Robey's chapter in volume one of this series (2018), on Ptolemy's drawing of a comparison and a distinction between bodily and artificial instruments as ways of scaffolding cognition.

alternative means of information retrieval to the biological memory, as in Clark and Chalmers' paradigmatic case (1998), Maxwell argues that the intended function of the medieval book is primarily to enable efficient memorisation. Drawing on Wheeler's paper (2018) on the way in which creative aspects of a process can be accounted for by the role of technological elements, Maxwell claims that the medieval book should be credited as a participant in the multimodal process it entails. The chapter focuses on the medieval music book as a multimodal cognitive artefact, and in particular on a couple of pages of *Livre de Fauvel*, in which art, text and musical notation are all deployed to trigger the senses of the reader, who becomes part of its cognitive ecology of production. A miniature image of the clerk reading the book that is pictured within the book models the artefact's function (p. 000), in the same way as Chaucer's narrator in the *Book of the Duchess* creates a metaleptic loop and provides an entry point into his creative process for its reader (Anderson and Iversen 2018). As with the use of familiar everyday settings and visceral embodied experience in medieval and Renaissance literary and art works more generally, these devices enable the partaker to transcend the everyday world and step into the revelatory world of the art work.

The importance of improvisation to the arts returns in a chapter by Evelyn Tribble and Julie Cumming (Chapter 12). The seeming paradox that constraints enable creativity is explored in the context of the considerable accomplishments of skill and memory achieved in the arts of this period. Drawing on Hutchins' (2014) observation that a cognitive ecology emerges from the interaction of neural, technological or sociocultural constraints that are in play, they explore how this operates in relation to expert and amateur performance in the arts. Performers' training and expertise is supplemented by the audience's experience and knowledge, with practice of the arts part of the education of aristocrats and the merchant class: 'it took a skilled audience to recognise the baseline on which performers improvised and embellished, and to appreciate the imaginative and idiosyncratic nuances of any such act' (p. 000). In general, virtuosic improvisation rather than mere rote memorisation is valued across the arts (music, dance and theatre) that this chapter explores. Cumming and Tribble untangle each of these particular ecologies, which are woven from distinctive assemblages of embodied expertise, artefacts, environments and social systems, in order to examine the demands placed on performers and audiences and to demonstrate that expertise emerges from multiple factors operating in concert: 'these forms of complex thought are located not in the head or the body alone, nor in the social and material system that underpins the practices, but in the peculiar assemblages that link each of these elements' (p.000).

The final chapters turn to an exploration of the relation between current notions of distributed cognition and medieval and Renaissance science and medicine. As with earlier work in this area, bodily states and processes are shown to be understood as a vital part of cognitive

processing, with the emotions one of the key mechanisms through which cognition is distributed across body and environment. Daniel Lochman examines the concept of 'passion as piercing' in relation to one's own experience of emotion and to the effects of emotion on others (Chapter 13). He explores a range of Renaissance medical and theological works, particularly focusing on Melanchthon, Levinus Lemnius and Thomas Wright, and compares them with current notions of 'affective interconnectedness' (Colombetti 2014). This historical and intellectual contextualisation provides grounds for choosing a particular pathway through the rich array of interpretative possibilities afforded by scenes in Spenser's *Faerie Queene* that variously employ the concept of passion as piercing. Focusing on this same concept of piercing, Hannah Wojciehowski's companion chapter shifts the contextualising perspective to current work on cognitive metaphor (Chapter 14). After critiquing Lakoff and Johnson for their tendency to view the entirety of the earlier Western philosophical tradition as having failed to perceive the embodied and environmental nature of human reasoning, Wojciehowski turns to an examination of conceptual metaphors that demonstrate that cognitive processes were understood to be 'highly susceptible to outside influences, which were imagined as physical intrusions' (p. 000). As with Burrows chapter on skaldic poetry, Wojciehowski here highlights the ways in which the language we use is itself a form of distributed cognition through an exploration of the role of conceptual metaphors. Metaphors are themselves cognitive vehicles, that help us carry the cognitive load of complex thought and are adapted by succeeding generations to the shifting demands of different contexts.

L. O. Aranye Fradenburg employs notions of affectivity in another vein in the next chapter. Enactivism's notions of affectivity are set alongside psychoanalytical insights as a means of examining the significance of the sigh and the breath in a range of medieval and Renaissance medical and literary works (Chapter 15). From the perspective of enactivism, cognition is liberally defined as sense-making, and consequently all living systems are cognitive and cognition is affective and appraising. Colombetti describes affectivity as an 'ever present mode of being in the world' rather than merely a contingent colouration of a neutral norm (2013: 12-13). Fradenburg explores how such a notion of 'primordial affectivity' might inform our understanding of the fundamental nature of our breathing of air and connection to each other's and the Earth's 'respirational rhythms' (p.000): 'As an instance of distributed meaning-making, breathing reaches through the body to its environment or *Umwelt*, to participate in acts of mutual transformation' (p. 000). She then explores evidence for this notion of breathing as a form of distributed cognition in psychoanalytical accounts and case studies, as well as in medieval and Renaissance medical and literary works. Finally, enactivism's description of the entwined nature of perception and action and the more generally acknowledged epigenetic variability of gene expression, leads Fradenburg to link the negotiable nature of meaning in linguistic expression to 'life's tolerance and even embracing' of diversity and adaptability (p.

0000). The vulnerability, or penetrability that was a focus in the two previous chapters, is again here depicted as a source of vitality in the co-emergence of organism and environment.

In the final chapter, Pieter Present also investigates notions of distributed cognition in scientific writings, but from the rather different perspective of seventeenth-century works by members of the early Royal Society (Chapter 16). Adopting Kirsh and Maglio's term of 'epistemic actions', defined by Clark and Chalmers (1998: 8) as actions that 'alter the world so as to aid and augment cognitive processes such as recognition and search', Present reconsiders the ways in which the organisation of material in written form was considered to be an epistemic action that improved on what was possible for the brain alone. Robert Hooke describes the internal 'repository' of the brain as being supplemented by the external 'repository' of writing and stresses the improved accuracy and enhancement of cognitive capacity that writing enables – as with Francis Bacon before him human being's need of artificial as well as natural instruments is made explicit.[49] In addition, as Present describes, the circulation of writings helped enable the Royal Society to work as a distributed cognitive system. Hooke and Thomas Sprat's descriptions of writing in *The History of the Royal Society of London* further demonstrate that they themselves conceived of writing as enabling a form of socially extended cognition. Present closes by considering the encouragement of the use of tables as a means to streamline the processing of the increased quantities of information that were being dealt with by the Royal Society, drawing on Andrew Riggsby's chapter in volume 1 of our series (2018), which describes the use of tables as itself an embedded skill that assists cognitive processing.

These fourteen chapters cumulatively substantiate the resonances of current notions of distributed cognition with a wide range of medieval and Renaissance practices and concepts, while at the same time revealing their inflection, to varying extents, by particularities of the period, such as Christian and humoural world views. The chapters draw on existing medieval and Renaissance scholarship, but by considering the cognitive dimensions of their topics, each one provides rich and compelling new insights on the topic they tackle, which as we have seen range from consideration of such basic processes as breathing to the most sophisticated scientific, literary and artistic endeavours. This breadth of applicability is richly suggestive of the fertile potential of distributed cognitive approaches. Brought to the fore by distributed cognition are diverse understandings in the medieval and Renaissance period of the role of the body and a broad range of natural and sociocultural artefacts and environments as collectively creative of human cognition. This book reveals a further stage in the historical development of our theoretical and practical attempts to comprehend and optimise the distributed nature of human cognition. Notions of cognition are shown to be fundamental to how we conceptualise

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[49] On Bacon see Anderson (2015b, 2016b) and for a classical precursor see Robey's chapter on Ptolemy in volume 1.

debates in every discipline – the study of cognitive phenomena cannot be considered a specialist niche, but is rather a necessary underpinning of any study of human nature. This volume and series are based on, and bear out, the premise that current notions of distributed cognition are simply expressions of an enduring paradigm that reflect the participation of the brain, body and world in cognition.