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The New Mind: thinking beyond the head

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Abstract Throughout much of the modern period, the human mind has been regarded as a property of the brain and therefore something confined to the inside of the head—a view commonly known as 'internalism'. But recent works in cognitive science, philosophy, and anthropology, as well as certain trends in the development of technology, suggest an emerging view of the mind as a process not confined to the brain but spread through the body and world—an outlook covered by a family of views labelled 'externalism'. In this paper, we will suggest there is now sufficient momentum in favour of externalism of various kinds to mark a historical shift in the way the mind is understood. We dub this emerging externalist tendency the 'New Mind'. Key properties of the New Mind will be summarised and some of its implications considered in areas such as art and culture, technology, and the science of consciousness.

Keywords Internalism · Externalism · Conscious mind · Neuroscience · Technology · Culture

1 Introduction

For much of recorded human history, in both the European and Asian traditions, the question of how to understand that most ever present yet elusive property of our existence—that fact that we have conscious minds—has occupied some of our greatest thinkers and provoked endless controversy. Since at least the time of Descartes, which marked the beginnings of modern science and philosophy, it has been widely held that the mind is a subjective entity that is ultimately separate from the objective material world. As Whitehead (1925), among others, pointed out, this notion was intrinsic to the conceit of scientific objectivity, sustaining a programme of scientific investigation that was free to omit subjective properties like quality, intentionality, meaning, and free will from its calculations.

The latter part of the last century, however, witnessed a significant shift in which it became respectable, indeed fashionable, for scientists to apply newly emerging methods of experimentation (such as brain scanning) to the 'search for consciousness' (Jennings 2000) and to find a place for the subjective mind inside the 'natural order' (Searle 1992). Unfortunately, despite much good work, the question of what the mind is has not become clearer, with multiple competing theories and viewpoints vying for attention within the increasingly crowded field of 'consciousness studies'. Even a brief survey of literature reveals that many prominent views about the nature of the conscious mind conflict on basic assumptions (such as the question of where the mind is located, as we will see), and there is little, if any, common agreement about the fundamental criteria that constitute a conscious mind as opposed to any other kind of entity (see for example Searle 2000; Seth et al. 2005; Ward 2011). Indeed, some of the key researchers leading the so-called quest to locate the conscious mind have admitted that trying to define the very thing that is being sought is, at the present stage of research, neither necessary nor useful: "Historically, significant scientific progress has commonly been achieved in

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the absence of formal definitions." (Koch 2004, p. 12) As a result, many researchers in consciousness now concede that trying to produce a universally acceptable and comprehensive definition of the conscious mind is currently unachievable. Yet despite the fact we lack any formal definition of the conscious mind (although we are not short of competing theories), the attempt to naturalise the mind—to ground our conscious experience in some physical phenomena—continues to gather momentum, with a growing number of journals, conferences, and academic associations forming to support an expanding field of research.

Naturalising the mind in scientific terms means, of course, that if the mind is taken a natural phenomenon, then it must have some spatio-temporal location, which is most commonly assumed to be the brain. The so-called identity theory of mind, which regards the mind as identical with the brain (or states of the brain), remains by far the dominant view in current science and is frequently stated as a foundational truth: "Only by moving our notion of mind towards that of brain can progress be made." (Lamme 2006, p.494); "The most basic principle of psychobiology or the cognitive neurosciences [is] that any human mental process is solely a reflection of or equivalent to some aspect of brain activity." (Uttal 2001, p. 206). This tendency to ascribe cognitive properties solely to the brain, and therefore to situate the mind inside the head, is often called 'internalism'.

But the fact that, as we will see, the identity theory fails to provide any convincing explanation of how the brain inside the head generates the mind has encouraged a growing number of scholars to explore alternative avenues, many of which eschew identity theory in favour of views that regard the mind as existing, at least in part, externally to the head (for example, Pepperell 2003; Noë and Thompson 2004; Rockwell 2005; Manzotti and Moderato 2010). Meanwhile, the growth of interest in 'externalism' in its various forms coincides with recent advances in technology that suggests redrawing the traditional boundary of the subjective self. The possibility that functioning minds could be embedded in digital computers, or that cognitive processes might be extended through prosthetic devices, has forced a reconsideration of the view of the brain as the sole repository of mental properties and the unique site of selfhood. The various communication and recording systems at our disposal encourage an ever wider distribution of personal information that seem to extend our presence both in time and in space (Clark 2003; Pepperell 2005).

In this paper, the authors will consider how the contemporary views about the mind are changing in response to certain scientific, philosophical and technological factors. While the question of what constitutes the mind is, of course, vast and infinitely complex, we will focus on the more restricted question of where the conscious mind might be located. We will contrast two broad categories of views, internalism and externalism, and some of the consequences of the latter in areas such as culture, human–technology relations and consciousness studies.[1] If the mind is spread out through the body and into the environment, including our technological environment, then it means that what constitutes our subjective experience is distributed too. Changes in our understanding of the mind and in our technological environment may have significant implications for our conception of what is it to be a sentient human, and may provoke a conceptual change so great so as to form the basis of what we propose to call here a "New Mind".

2 Mediated reality and the inner mind

To properly appreciate the radical nature of the challenge externalism poses to dominant internalist views of the mind, it is necessary to show how deeply rooted internalism is in our culture. Stretching back to the time of Plato, we have commonly entertained the notion that our access to external reality is mediated through a distinct mental realm. This is evident in the epistemologies employed by scholars and artists of the Italian Renaissance (who derived much of their thinking from classical sources). The invention of single-point mathematical perspective by Filippo Brunelleschi and Leon Battista Alberti formalised a model of perception that accorded with certain mathematically structured principles, which could then be imposed on the world in order to represent it faithfully (Kemp 1990). We see this illustrated, for example, in the widely referenced woodcut by Albrecht Dürer (Fig. 1), in which reality is arrested through the intervening technology, resulting in a mathematically correct perspectival image, which in itself becomes a benchmark of the real. This historical paradigm leads to what Jonathan Crary has called the 'contemporary observer' (Crary 1992; Crary 2001). For Crary, our understanding of how the mind interacts with the world has been shaped by continuous use of instruments, from the camera oscura to photographic cameras and virtual reality displays, which focus the beholder's attention on projected replicas of the world. These then come to stand in for the world itself. This has strongly encouraged the notion, implicit in many accounts of perception, that the mind provides some representation

[1] We will not provide here detailed analyses of the many and various internalist and externalist positions; there is already a substantial literature to which interested readers can refer, much of which cited throughout this paper.

Fig. 1 Albrecht Dürer, Draftsman Drawing a Reclining Nude, ca 1527, woodcut

of external reality that is projected inside the head, much as an image of the external world is projected inside the camera obscura.

Contemporary theories of vision, which inform theories of perception and therefore of mind, have tended to follow this historical model. The relevant literature is densely populated with visual sections, retinal images, proximal and distal stimuli, input and output channels, and information systems, all of which exemplify the need to postulate mechanisms that turn external reality into an internally accessible representation. One highly influential approach championed by David Marr (Marr 1982) sought to unite vision science with robotics AI and computational neuroscience in order to create a mechanically mediated visual system that not so much 'saw' the world as mathematically represented it within the computational apparatus. The decoupling between external reality and our internally represented experience has been the bedrock on which rests a view of the human mind as autonomous, and indeed isolated, from the world around it.

3 Decline and fall of the inner mind

Despite the dominance of the mediated model of inner consciousness in science, and its widespread acceptance elsewhere, it by no means an unproblematic or uncontested account of the mind's relationship to the world. For one thing, there is a risk that mathematical or technological formalisations of perception could become confused with perception itself—the error taking the 'map' for the 'territory' was pointed out by one of the founders of general semantics, Korzybski, in the early 1930s (Korzybski 1994, p. 750). And phenomenological philosophers have often noted the absurdity of the fact that internalism denies us any means of verifying whether a brain-generated representation of the external world bears any relation to what we suppose they represent (Gallagher and Zahavi 2008, p. 94). Nor does appealing to the representational processes of the brain alone seem to be a fruitful way of modelling features of mind such as intelligent behaviour. The grand project of classical artificial intelligence—to build a mechanical mind based on logical manipulation of symbolic information—was largely abandoned in the early 1990s in favour of situated, embedded, embodied and distributed models which understood intelligent behaviour as emerging from the collaboration between system and environment rather than as an internal function of the system itself (Brooks 1991; Arkin 1998; Ziemke and Sharkey 2001; Chrisley and Ziemke 2002; Chella and Manzotti 2009; Shanahan 2010).

But perhaps the biggest worry for the inner mind view is the continuing inability of neuroscience to determine where or how the brain generates phenomenal experience (Chalmers 1996). In the early 1980s, the eminent philosopher John Searle could confidently claim, "mental processes that we consider to constitute a mind are caused, entirely caused, by processes going on in the brain" (Searle 1984, p. 39). But nearly 30 years of intensive probing by highly sensitive scanning techniques has since failed to substantiate this claim empirically. So far, no mental content or phenomenal experience has been spotted inside the human head, something even supporters of internalism have to concede (Adams 2010). Searle's claim is not, as he believed "just a fact about how the world works" (ibid.) but rather a conceptual prejudice.

It is hard to blame neuroscientists for aiming to repeat what has been elsewhere a successful strategy in the history of science, that is, attributing the causes of behavioural phenomena to localised biological mechanisms. The action of muscular strength, for example, can be adequately explained by reference to the development of the organism

and the interaction of various chemicals and fibres in the body. Yet it is not at all clear that a similar explanatory strategy would apply in the case of the brain's relationship to the mind. Artificial mechanical means can be used to replicate, even supersede, organic muscular action; even an artificially grown muscle might perform the same task. Yet in the case of the conscious mind, there seems to be no comparable causal properties detectable in the brain. There is no known way (or even any credible hypothetical way) in which activity in neurons can directly give rise to ideas, thoughts or feelings. Nor would replicating the brain in some mechanical form, as far as is yet known, lead us any closer to an explanation of the brain's causal efficacy. The palpable lack of progress in determining a neural explanation of the mind has prompted some thinkers to consider alternative hypotheses about how our mental life is constituted, many of which explore the possibility the mind is not located entirely in the head after all.

The last 20 or so years has seen a move within a large range of cognitive science and philosophy towards views in which responsibility for mentality is spread beyond the head, reaching into the body and the world. Prominent among these are the enactive conceptions of mind and perception, which substantially downgrade the role of the brain in favour of the bodily processes associated with action and sensorimotor contingency (Varela et al. 1991; O'Regan and Noë 2001; Hurley 2003; Noë 2009). Others have developed forms of externalism that situate the conscious mind far beyond the subject's skin (Tonneau 2004; Rockwell 2005; Honderich 2006; Manzotti 2011a, 2011b). At the same time, developments in prosthetics and neural implantation have stimulated speculation about the possible development of cyborgs, organic–technological hybrids that enhance or replace normal brain functions with silicon processors that could conceivably be located anywhere (Warwick 2004).

Inspired perhaps by such technological developments, Andy Clark and David Chalmers have mounted a direct philosophical challenge to the internalist paradigm by arguing for the extension of the cognitive processes from the head to external objects such as calculators, notebooks and computers (Clark and Chalmers 1998; Clark 2008). This work has spawned a vigorous debate between the growing number of supporter of the extended mind and those stepping into defend the internalist line (Rupert 2004; Wilson 2004; Menary 2006; Adams 2010; Menary 2010; Rowlands 2011). Much of this recent work is rooted in a strand of thought that has been developing within philosophy of mind since the 1970s, with arguments in favour of externalist models of semantic content (Putnam 1975; Burge 1979) and even phenomenal content (Dretske 1996; Lycan 2001).

Although the debates in cognitive science and philosophy have been prominent in the current literature, it is also important to recognise the wide range of other disciplines in which related ideas have been proposed. A merely indicative survey would include the anthropologically based conception of the extended mind developed by Alfred Gell (Gell 1998), which regards cultural artefacts as literal embodiments of thought; the material engagement of archaeological evidence (Malafouris 2005), which offers a projective account of vision and remote sensing; the direct perception approach of psychologist Max Velmans (Velmans 2000) developed to account for the nature of perception; the situated and environmental approach to art and aesthetics (Berleant 1987; Manzotti 2011a); and in quantum physics, where non-locality implies physical particles of the kind that must make up the brain are distributed across time and space, throwing doubt on any physicalist model of mind that seeks to locate consciousness within a fixed location (Nadeau and Kagatos 1999).

4 The New Mind: towards a postneural consciousness

While the various challenges to the internally located view of the mind are undeniably varied in target and approach, there is a common thread that binds them: each resists the notion of a mind isolated in a head and promotes instead a view of the mind that extends or spreads into the body and world beyond. A corollary to this 'extended' or 'spread' notion of the mind is the negation of the long-held belief in the essential distinction between the mind and the world. Once the barriers between the world we perceive and our perceptions of the world are removed, then reality becomes *part of* what we experience rather than some internally mediated but remote external realm.

Taking these many different approaches together, we propose there is sufficient commonality between them, and momentum in their development, to justify a collective label describing what is a major shift in the way we understand the relationship between our minds and the world, for which we suggest the term 'New Mind'. The New Mind encapsulates what is shared by much of the research cited above, that is, an emerging 'postneural' view of consciousness that could supplant the classical brain-centred model that has dominated for so long.

Some key features of the New Mind are as follows:

1. That the mind, and mental properties in general, are not confined to activity within neural tissue in the head.
2. Reality and the mind share the same ontological status rather than being, as in the classical model, ontologically distinct realms.
3. Our access to the world is understood, to a greater or lesser extent, to be direct rather than mediated, representational or illusory.

This New Mind presents us with a profoundly different conception of this most fundamental attribute of our human condition from that which has held sway for hundreds of years. If we take the New Mind seriously as a model of how we and our conscious experience fit into the world, then it will have major consequences for how we understand own being. We will briefly consider some ways in which the effect might be felt: in culture and aesthetics, in our relationship to technology, and in the science of consciousness itself.

5 The New Mind: some implications

The potential implications of fundamentally changing the way we think about our minds and their place in the world are enormous. After all, the assumptions we make about these basic categories will determine our epistemological, ontological and indeed metaphysical outlook; it does not get much more fundamental than that. Here, it is only possible to touch very briefly on a few such implications, but there are certainly many more, including social, ethical, legal, environmental and political, that will need further consideration.

5.1 Culture and aesthetics

The recent growth of interest in theories of cognitive extension has prompted thinkers to consider some of the implications such theories might have beyond the immediate concerns of cognitive science and philosophy. Christopher Ramey, for example, follows phenomenologists such a Merleau-Ponty in erasing the putative boundaries between mind, body and world, arriving at a view of cultural objects as constitutive parts of human beings in general (Ramey 2007). This wider cultural point finds more explicit expression in the case of art and the way in which we respond to it, most frequently studied in the field of aesthetics.

Although largely philosophical in method, the study of aesthetics also has a strong empirical tradition, most recently evident in the hybrid discipline of neuro-esthetics (Zeki 1999). Here, neuroscientific methods are used to study how the brain responds to art, seeking neural correlates of experiences like beauty (Kawabata and Zeki 2004). The working assumption behind the discipline of neuro-esthetics, as its name suggests, is that our experience of the world, including our aesthetic experience, is rooted in brain activity. Indeed, its leading proponent is quite clear on this point: 'My aim in writing this book has been really to convey feeling that aesthetic theories will only become intelligible and profound once based on the workings of the brain…' (Zeki 1999, p. 217).

But aesthetic experience is a mental phenomenon and as such constitutes part of the mind of the person undergoing the experience. Under the New Mind paradigm, the physical location of this experience can no longer be attributed to the head alone but must spread into the world. Speaking of the way certain renaissance artists deliberately designed their works so as to integrate the viewer into the work itself, the philosopher of aesthetics Arnold Berleant writes, "…the traditional model of the aesthetic situation, in which the viewer is discrete from the object, is both inadequate and misleading…a claim demonstrated in a direct manner ever more insistently by…artists themselves. These workers in perception have increasingly expanded the boundaries of the art object to incorporate its perceiver. They offer us a realm of experience in which art and object are not 'separate but equal,' but rather one in which both are fully integrated into a single perceptual field" (Berleant 1987, p. 412).

Given the New Mind paradigm, studying aesthetic responses on the basis that they must be accounted for by brain activity alone would produce misleading results about the nature of that experience and a distorted view of how art functions. No doubt the brain has a role to play in our appreciation of art, but to fully understand such phenomenon, we must also consider those aspects of the 'aesthetic situation' that lie beyond the head. Berleant argues we need to see this in terms of a distributed set of processes, which include the mental properties embedded in the artwork as well as those embedded in the viewer. On this view, works of art are not simply inert physical objects but actually contain, albeit in latent form, the thoughts, ideas and feelings of the artists who made them. It was the highly renowned British portraitist Joshua Reynolds who declared, "What is a well-chosen collection of pictures, but walls hung round with thoughts?" (Reynolds 1825, p. 633).

Understanding aesthetic experience in this way can profoundly affect how we might investigate it experimentally; it will require an entirely different methodology from that employed by neuro-esthetics, or even the more traditional psychological studies or aesthetic response. It will mean gathering data from across a wide spectrum of processes, from the phenomenological to the neurobiological, the psychophysical and the behavioural, and extending to the environmental and the cultural. Notwithstanding the practical and conceptual difficulties entailed, the gains from such an inclusive approach would be substantial in terms of veracity to the object of study and potential increase in explanatory power. In fact, there are some indications that the study of art is moving in this direction with the recently spawned hybrid discipline of 'neuroarthistory', which combines neurobiological theories with art historical knowledge (Onians 2008).

Adopting a stance in which we recognise the mental properties that exist beyond the head might yield further explanatory dividends. A traditional problem in the philosophy of art has been how to account for art's affective power, that is, why do we relate so strongly to the emotions depicted in the apparently inert and inanimate artefacts such as paintings (Paskow 2004). Yet the New Mind paradigm suggests a fruitful source of potential explanation. As outlined above, abandoning the centuries-old dichotomy between internal mediated reality and external reality liberates the mind from its conceptually imposed isolation. We can now think of mental properties, such as amusement, anguish, sadness and so on, not as localised functions of a discrete group of neurons but as properties that extend far beyond the subject and into the material world. We can now start to see the products of human culture, with all their mental attributes, as direct extensions or extrinsically manifested repositories of what were once thought to be purely internal mental states.

Think of the terror of the victims in Goya's *The Third of May 1808* (1814) or the quiet despair of the seated woman in Degas' *L'Absinthe* (1876). If the mental qualities of terror and despair do not reside in some way within the fabric of the works, then we have to ask where else they could be, given that we only have access to them is through the works alone. This is not to suggest the painting in either case is 'alive' or 'thinking' independently of being observed but rather that when seen by a sufficiently empathetic person those qualities can be appreciated through the reciprocal relationship between the work and the viewer. The capacity to embody and relay human experience through material objects is what Freud referred to as the 'magic of art' (Freud 1991). Indeed, some anthropologists have argued that human culture as a whole is driven by a primordial belief in the capacity of objects in the world to carry and convey mental states (Gell 1998). Those who deny mental properties can exist beyond the head (e.g. Adams and Aizawa 2008) must find some way to account for this affective power we find consistently in works of art and in human culture more widely.

5.2 Our relationship with technology

It may seem logical to think of the technological artefacts that surround us as inert, mechanical objects, devoid of mental properties much as the classical view of the mind encourages us to think of artworks as purely material things. Yet in the same way, we can benefit in terms of our understanding of the aesthetic situation from recognising the mental properties that artists can deposit in their works, so our understanding of our relationship to technology can benefit from recognising the mental properties embedded in machines and other devices.

We know we are capable of attributing states of mind to inanimate objects through anthropomorphism (Nowak 2003). But while we can be deceived into believing a machine is sentient by the provision of certain cues, it is not generally held that such objects contain mental properties in themselves. For most purposes, the world is more or less cleanly divided between animate (and often sentient) objects and inanimate (and insentient) objects. The work by Clark and Chalmers in the 1990s, however, began to open up a serious debate about the bounds of the mind and the potential of devices like computers to contain aspects of the mind (Clark and Chalmers 1998). Clark and Chalmers were careful in their proposals to limit themselves to 'cognitive processes' rather than consciousness itself (Chalmers 2008), but nevertheless with their proposals, a certain conceptual boundary had been crossed, and much discussion ensued in certain philosophical circles about the possibility that we might extend our minds through technological apparatus so undermining the widely held assumption that the conscious mind is confined to the inside of the head.

In fact, the potential of technology to extend the mind had been advanced by earlier media theorists, including Marshall McCluhan (McLuhan 1964), and has been enthusiastically advocated by certain posthuman and transhumanist theorists and seriously discussed by philosophers (e.g. Sandberg and Bostrom 2008; Chalmers 2010). What excites many posthumanist thinkers is the technological potential for artificially replicating, or even replacing, the organic 'hardware' on which the 'software' of our minds currently 'runs' with a more robust and extensible silicon-based system. Such speculation can, however, overlook the extent to which all technological artefacts, even simple and crude ones, can be already understood as repositories of mental properties.

One consequence of the view summarised here as the New Mind, in which mental properties are no longer confined to the head, is that the various entities, relations or processes that contribute to our overall mental activity become constituents of that activity, and therefore parts of the mind in question—a view articulated by philosophers such as George Mead in the early twentieth century (Mead 1934). Opponents of the extended mind thesis (a variety of externalism) explicitly reject this notion, calling it the 'coupling-constitution fallacy' (Adams 2010). For such critics, such a fallacy leads to the absurd situation in which a pencil used by a sentient person to carry out a cognitive process (writing an *aide memoire*, for example) acquires mental properties of its own.

But such anti-externalist arguments deny two important ways in which even an object as simple as a pencil can be attributed mental properties: First, there are significant quantities of intelligence, knowledge and experience bound

up in the design, manufacture and use of the pencil. As with all human-made objects, and with technology in particular, the material artefact is shaped, formed, constructed or engineered as much by the mind of the maker as by any material process and therefore stands as an expression of that mind no less than other ways in which minds are expressed (such as speech, gesture, behaviour, etc.). The expression of an idea, therefore, is regarded as a constituent of that idea. Second is the rather straightforward conceptual point that whatever our minds attend to at any moment is, logically speaking, a bona fide part of the mind in question. If I give thought to a pencil, or a painting, then is seems reasonable to include those objects as part of the mind in which they feature.

These are not so much formal philosophical claims as different ways of thinking about everyday phenomena suggested by a model of the mind that is no longer confined to the head. Their potential impact as ways of thinking about our relationship to the material world, and our technological environment, is significant. First, we can no longer think of technology as a distinct realm from which we are separated, or even as something which we have an antagonistic relationship. In the same way, we do not divorce the mind from reality we do not divorce our selves from our technological products. Rather, technological artefacts become aspects of the human mental condition that are spread out through the world, embodied in mechanical systems or objects as well as in organisms. Second, and as a consequence of the first point, we can no longer think of our selves as discrete and isolated entities, trapped as it were in the cave of our internally located self. If we equate our capacity for sentient being with the minds we have, then the distribution of those minds far beyond the head and body, increasingly amplified and accelerated by new communications and other technologies, has the direct effect of distributing our being, both in time and space to almost infinite degree. In doing so, we do not necessarily abandon our sense of self-cohesion and the uniqueness of our own personalities and experiences. But we must at least acknowledge the extent to which they can no longer be confined to a small mass of neurons and instead ripple through the world in highly mobile ways we can no longer control.

5.3 The science of consciousness

Despite the current increasing interest in various theories of embodiment, situated cognition, ecological perception and externalism (Finlay et al. 2001; Thompson and Varela 2001; Hirose 2002; Shanahan 2005; Pfeifer et al. 2007; Rakic 2009; Robbins and Aydede 2009) there remains a surprising degree of consensus in the scientific community that an isolated brain is sufficient to sustain phenomenal experience. Few would deny the necessity of development, environmental feedback and sensory–motor integration for healthy brain function. But even so, it is widely held that once the brain is 'up and running' these factors pale into insignificance as far as the brain's role is generating awareness, phenomenal experience, intentionality is concerned. Typically, phenomena like dreams and hallucinations are seen as self-contained processes that, like conscious experience, occur without reference to any sensory input from the world (Revonsuo 2006; Nir and Tononi 2009).

Meanwhile, the contemporary fascination with the brain as locus of our most intimate feelings—expounded by many of our most eminent scientists (Crick 1994; Zeki 2001; Koch 2004; Tononi 2004; Tononi and Koch 2008)—has spawned a whole series of neurologically based approaches to knowledge: besides neuro-esthetics, already discussed, we have neuro-economics, neuro-theology, neuro-marketing and so on. But while any contribution to knowledge or understanding is to be welcomed, the inherent risk of this 'neuro-centric' approach is, as indicated above, to prematurely reduce widely distributed processes to local mechanisms. The idea persists that we will find the 'neural signature' for beauty, happiness or romantic pleasure, as if the love of Romeo for Juliet could be reduced to, or explained by, the state of his brain alone.

The New Mind proposed here suggests a quite different approach to understanding the nature of consciousness and its place in the world and one that could greatly affect the way science looks at, or for, the mind. One of the most immediate consequences might be the abandonment of the long-term quest to locate the mind within specific mechanisms in the brain. In fact, this was suggested over a decade ago by the eminent vision scientist Jan Koenderink: "To put it bluntly: since the mind isn't in the head anyway, what use is it for me to peer into the brain? I believe that many people who use brain scanning methods to get a handle on problems of psychology erroneously locate the mind in the head…The mind is far from being the product of the brain. It derives from the interaction of the embodied brain and the world." (Koenderink 1999, p. 1181).

Scientists studying the nature of consciousness must now seriously consider the possibility that it is not solely a function of the brain and start to recognise those aspects of our mental life that extend into the body or the world. There are many and various channels through which such research could be developed: Medical evidence suggests that we have a 'second brain' in the stomach, which has its own network of neurons (Gershon 1999). If consciousness arises from the interaction of neurons, as theorists frequently suggest, then why should the neurons in the stomach be any less capable of mental activity than those in the head? And why should the study of consciousness be

restricted to the body at all? Recent work on so-called out of body and near-death experiences, in which patients report conscious experiences during periods of brain death, offer tantalising suggestions of mental activity occurring independently of the living body (Van Lommel et al. 2001). Likewise, the work of the psychologist Dean Radin has consistently shown that suitably trained subjects can influence physical systems through mental activity alone. Research of this kind, once considered at best 'fringe science,' is increasingly being taken seriously, with papers on the findings delivered at major consciousness conferences and published in reputable journals (Radin 2006, 2008).

If the so far fruitless task of searching for precise neural correlates of consciousness in order to substantiate the mind–brain identity theory was abandoned forthwith, then many hours of research time, with associated scanning and data analysis costs, could be saved. Of course, one would not want to deny that certain patterns of neural activity might reliably be correlated with certain cognitive states or that the close study of the brain can reveal something about how we think—far from it. But given the approach being advocated here to continue such studies on the basis that the entirety of our experience can be accounted for in this way would be mistaken. Far better from an empirical point of view to stalk the elusive prey of experience in its native habitat, that is, as an integral part of the world rather than as an isolated observer detached from it; far better to acknowledge what Alva Noë has called the 'external correlates' of consciousness as well as the internal ones (Noë 2009, p.42).

6 A new world for a New Mind

The idea that the mind is not confined to the brain is actually very old, with panpsychist theories of mind being among the most ancient and recurrent in human history (Skrbina 2003). But, as we have shown here, in recent years it has re-emerged forcefully across a wide range of disciplines. This New Mind represents a crucial shift in our understanding of humans and their place in the world. It is a shift that has the potential to liberate us from the claustrophobic and solipsistic boundaries imposed by the dominance of the internally mediated reality. Undoubtedly, the ubiquity of new technologies, and the ideas surrounding them, are prominent among the factors that have caused us to rethink fundamental beliefs about the nature of human mind: in particular, where it is located. Some have seen rapid and pervasive technologicalisation as a threat the core of what it is to be human, leaving us stranded in some barren evolutionary backwater as homo sapiens are superseded in the evolutionary race by prodigious machines. But a different picture may be emerging in which the stimulus provided by new communication systems, intelligent devices and other technologically encoded forms of human ingenuity liberates us from the insular domain our philosophical and scientific tradition has so far trapped us in.

The New Mind challenges some of our most familiar and deeply held dichotomies, such as mind versus world, mental versus physical, self versus environment, internal versus external and subject versus object. It asks us to think again about the fundamental nature of the relationship between ourselves, each other and reality. We begin to regard the mind not as a dislocated and disembodied phantom but in terms of a distributed conscious system deeply integrated into our bodies and everything around them. Until recently, we could afford to ignore this possibility or consign it to mere philosophical speculation. But evidence appears to be mounting of a change we can no longer ignore or dismiss. We must begin to look seriously at the implications this will have for understanding of what it is to be human.

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