

Book review: Understanding blindness

Baron-Cohen, S. 2003. *The Essential Difference: Men, Women and the Extreme Male Brain*. London: Allen Lane.

Simon Baron-Cohen is well known to researchers in the philosophy of mind and cognitive science, largely on the strength of *Mindblindness* (Baron-Cohen 1997), his important book on the origins and nature of autism. He has now followed up that book with *The Essential Difference* (Baron-Cohen 2003), a much more ambitious work which aims to explain not only autism, once again, but also the (alleged) essential differences between men and women. This is a book which aims to reach a much wider audience. It is therefore important to examine it, both because it is the product of an important thinker, and because it is likely to have an impact on the wider intellectual climate.

Unfortunately, *The Essential Difference* is a very disappointing book. There are many things wrong with it. But its central fault is one that is all too characteristic of a great deal of work in psychology. It is the complete innocence of a conception of reason that is, broadly, phenomenological.¹ Phenomenology's most important contribution to our intellectual tradition, I believe, does not consist in its distinctive methodology but in its conception of reason and intelligence as embodied, situated and holistic, and as decidedly *not* reducible to rule-governed manipulations of symbolic representations. Neglect this vision of reason at your peril, as Baron-Cohen's work vividly demonstrates. His superficial notion of intelligence vitiates both his central theses: that there is an 'essential difference' between men and women, and that autism is the product of 'the extreme male brain'.

Baron-Cohen's major claims (stated, as we shall soon see, more carefully than he is wont to do) are these:

1. On average, men and women differ psychologically. Men have an advantage when it comes to systemizing, and women have an advantage at empathizing.
2. These differences are biological in origin, as is demonstrated by studies of neonates and correlations between psychological traits and fetal testosterone.
3. Systemizing and empathizing give rise to different kind of cognitive abilities. Men and women have different, but equally valuable, intellectual skills. Neither gender is more intelligent than the other.

4. However, the male superiority at systemizing leads to male superiority in science and in innovation.
5. The psychological differences between men and women help explain the origins of autism. People with autism, who are primarily male, possess extreme male brains.

Each of these claims is, at best, dubious as I shall now show in detail.

Systemizing and empathizing

Baron-Cohen's central claim² is that 'the male brain' has 'slightly lower empathizing skill and slightly better systemizing skill' whereas the female brain 'shows the opposite profile' (Baron-Cohen 2003, p. 133). As used here, 'male brain' and 'female brain' refers to the minds (not the brains) which exhibit these profiles, not the brains (or minds) of biological males and females. Some biological males have female brains, and vice-versa. Men just *tend* to have male brains; women to have female brains. The tendency is, however, strong; apparently it is strong enough to explain the almost complete male dominance of maths, physics and engineering (Baron-Cohen 2003, pp. 71–2).

Now, in what do the differences between male and female brains supposedly consist? What is systemizing and what empathizing? Systemizing, Baron-Cohen tells us, is 'the drive to analyze, explore and construct a system' (Baron-Cohen 2003, p. 3). A systemizer attempts to understand a system in terms of input-operation-output rules. He tries to extract the rules which govern the transformation of the input into the output by varying the operation in various ways. Thus, he hopes to understand the systematic regularities which are in play. For instance (to use Baron-Cohen's own example), a systemizer might attempt to understand the rules which govern the output of a light-dimmer by varying the operation: turning the light-dimmer one way or the other.

Empathizing, on the other hand, is 'the drive to identify another person's emotions and thoughts, and to respond to them with an appropriate emotion' (Baron-Cohen 2003, p. 2). It therefore has two, not always very clearly distinguished, aspects. It combines the *mindreading*, which was central to Baron-Cohen's earlier theory of autism, with an affective component. Mindreading is the ability correctly to identify the mental states of another person. It is obviously independent – at least conceptually – of any element of care for that other. As we shall see later, Baron-Cohen's failure clearly to distinguish these elements makes trouble for his theory.

Baron-Cohen argues that these two drives (as he has it) are fundamentally distinct. Those of us who believe that the phenomenological conception of reason is correct will agree with him, at least in part. It really does seem to

be the case that we typically understand the social world without the need to formulate rules, explicit or implicit. We simply see what is relevant and what appropriate, and act accordingly. This ability, as Baron-Cohen correctly holds, allows us to negotiate the reefs of social life with relative ease. Our intuitive grasp of what is required allows us to behave skilfully in circumstances in which a set of rules would prove too unwieldy to yield more than minimally competent performance at best (Heidegger 1996; Merleau-Pony 1962).

The problem, for Baron-Cohen's thesis, is that the plausibility of this view is not limited to our grasp of the social behavior of our fellow human beings. In recent years, for instance, the view known as particularism in moral philosophy has been gathering support. Particularists claim no rules or general principles can guide expert action in the moral realm. The moral realm is simply too complex for such rules to help. Instead of following rules, the morally sensitive person just *sees* what matters: what considerations are relevant to action in this particular situation. Her developed ethical sensitivities guide her appropriately, where rules cannot (Dancy 1993; Hooker and Little 2000).

Baron-Cohen might argue that morality (which, it is plausible to believe, is closely linked to empathy) is governed by the same kinds of cognitive faculties which guide social life in general, while the systemizing approach is superior with regard to other domains of enquiry. He would face opposition in so doing from at least some particularists, who explicitly deny that their intuitionistic approach is appropriate only in the moral domain. In fact, Dancy argues, all our practical judgments are the result of grasping the shape of the circumstances in which we find ourselves, not of applying rules to case (Dancy 2000, pp. 130–132). Recent support for such views has come from researchers in AI, and from cognitive scientists (eg., Clark 1997).

Indeed, Baron-Cohen's elevation of the power of systemizing, of constructing 'if-then' rules which describe the behavior of predictable natural and physical systems and therefore allow us to construct and to control them, is curiously reminiscent of what John Haugeland (1985) has called GOFAI (Good Old Fashioned Artificial Intelligence). Researchers who took the GOFAI approach to designing intelligent machines believed that human-like intelligence was essentially rule-governed computation writ large. What separated the designers from the machines they built was merely the size of the data-base from which they drew their symbolic representations, and the number and complexity of the rules with which they manipulated these representations. Though it would be false to say that this program has been conclusively shown to be sterile, there is good reason to think that the approach is fundamentally flawed, precisely because its notion of intelligence is wrong-headed. GOFAI research ran into a problem which has haunted the program ever since: the so-called frame problem, of specifying, using their systemizing approach, a means of distinguishing relevant information from irrelevant. It may be that the frame problem is insoluble within the GOFAI research program. But if

this is the case then that program could not have been modelling human intelligence at all. It was working with a fundamentally misguided notion of what intelligence actually is (Dreyfus 1992).

Most likely, then, human intelligence is not essentially rule-governed manipulation of symbols, mere systemization: it is also, and more importantly, the capacity to see what matters in a situation, to grasp what is relevant and what is not. We apply our thick concepts to a world understood as already patterned in ways that are meaningful to us. Our intelligence is not a systemizing capacity; it is rather something much closer to what Baron-Cohen understands by empathizing: the ‘drive’ to *understand* the world, and to react appropriately, not the ‘drive’ to systemize it from a position outside and above it.

But might not Baron-Cohen be right to this extent: might not it be the case that though intelligence is very importantly a matter of grasping relevance, as phenomenology insists, nevertheless there are intellectual disciplines in which what he calls systemizing plays a much greater role – for instance, those disciplines in which men predominate, such as mathematics and physics? Furthermore, might not it be the case that though skilful coping, for instance in the sciences, is generally an intuitive matter, nevertheless innovation, even in these arenas, is the product of extensive systemization?

High-level cognition, that is, excellent performance in systemic enquiry in any domain, is very likely to require systemizing abilities. That ought not to be in dispute. Moreover, it may well be the case that the degree to which systemizing is necessary varies from discipline to discipline. However, this is unlikely to give men an advantage over women, even in these disciplines (and assuming, for the sake of the argument, that Baron-Cohen is correct in his views concerning the differences between the sexes). For both systemizing and empathizing are likely to be necessary, for skilful performance and innovation, even in the sciences, and therefore a high degree of skill in one is unlikely to compensate for a relative lack of the other. Consider Kuhn’s sketch of the way in which young scientists acquire the skills they need for belonging to the scientific community (Kuhn has physics specifically in mind). The student gradually comes to see each problem he confronts ‘as *like* a problem he has already encountered’. After he has completed a number of exemplary problems,

he views the situations that confront him as a scientist in the same gestalt as other members of his specialists’ group. For him they are no longer the same situations he had encountered when his training began. He has meanwhile assimilated a time-tested and group-licensed way of seeing (Kuhn 1979, p. 189).

If Kuhn is right, coming to understand physical processes, in the manner of a scientist, is more akin to what Baron-Cohen calls empathizing than it is to his notion of systemizing.

Moreover, as Kuhn and others make clear, innovation requires this prior intuitive grasp of the domain. For Kuhn, scientific revolutions occur when anomalies accumulate to such an extent that they overwhelm a normal scientific paradigm. Though normal scientists, because they see the physical world in a particular *gestalt*, resist seeing these anomalies, nevertheless they are far better at articulating them very precisely when they do perceive them, *because* of their paradigms: 'Anomaly appears only against the background of the paradigm' (Kuhn 1979, p. 65). Kuhn's view of innovation in scientific theory is given a ringing endorsement by Einstein, who claimed that his breakthroughs were the result not of 'a logical path' but 'intuition, supported by being sympathetically in touch with experience' (quoted in Dreyfus and Dreyfus 1988 p. 41). In a similar vein, Dreyfus argues that only the master of a practice can reliably innovate in it: only such a master can make a new and unexpected move, 'and have it recognized in retrospect as having been just the right thing to do' (Dreyfus 1992, p. xxiv). Intelligence, even in the hard sciences, and even in innovation, is as much an 'empathizing' power as it is systemizing.

To be fair to Baron-Cohen, he does not argue that systemizing ability is superior to empathizing ability, and to that extent he does not equate systemizing with intelligence *tout court*. Both systemizing and empathizing are *aspects* of intelligence, he asserts, and for this reason, we ought not to expect men to be, on average, more intelligent than women. Since empathizing is correlated with good verbal skills (perhaps because caring for people provides an incentive for effective communication), we can expect women to perform better (on average) on the verbal parts of the IQ test, whereas men will perform better on the non-verbal (Baron-Cohen 2003, p. 184). However, this concession does not amount to much, for two reasons. First, though men and women are supposed to be equally intelligent (on average, and as measured by standard IQ tests) men, with their greater talent for systemizing, can be expected to have an advantage when it comes to innovation (Baron-Cohen 2003, p. 164). Second, the special talents of women will be useful only in certain areas (those areas, not coincidentally, in which women have traditionally been well-represented). It is worth quoting Baron-Cohen's masterpiece of condescension in this context:

Society needs both of the main brain types. People with the female brain make the most wonderful counsellors, primary-school teachers, nurses, carers, therapists, social workers, mediators, group facilitators or personnel staff. Each of these professions requires excellent empathizing skills. People with the male brain make the most wonderful scientists, engineers, mechanics, technicians, musicians, architects, electricians, plumbers, taxonomists, catalogists, bankers, toolmakers, programmers or even lawyers (Baron-Cohen 2003, p. 185).³

So while men and women are equally intelligent, on average, women's intelligence is best employed in putting people at their ease, while the men get

on with understanding the world and building and repairing the things we need in it. It is difficult to see the difference between this and the traditional view of sexists, even when we add the caveat that not all women have female brains, and not all men male ones. It is also, it should be clear, the expression of the simplistic view of intelligence we have rejected: men are better at understanding and building things *because* they are better at rule-governed manipulations of symbols.⁴ It is far more likely, on the view of intelligence we have described as phenomenological, that systemizing is an essential skill of high-level cognition, but that to the extent to which systemizing ability overwhelms ‘empathizing’ (that is, the ability to grasp situations in the appropriate *gestalt*) it degrades, not enhances performance. Thus, there is no reason to believe that the (alleged) superiority of males in systemizing would lead to male dominance of professions devoted to understanding and altering the world.

Baron-Cohen’s simplistic views on intelligence lead him to mistaken views as to the supposed differences between men and women. They may also mislead him with respect to the dominant concern of all his work: the understanding of autism. Autism, he now claims, is a manifestation of the extreme male brain. People with autism are relatively good systemizers, sometimes, as with Asperger sufferers, they are excellent systemizers. But they are very bad at empathizing. Hence their difficulty in navigating the social world, in which empathy is a much better guide to appropriate behavior than is any system of rules.

It is an intriguing thesis, but there are inconsistencies in the theory. Empathizing, we must recall, is made up of two relatively independent components: the ability to mindread and an affective component. Now, Baron-Cohen claims, males tend to lack one of these components more than the other. Their mindreading skills tend to be intact, but their compassion for others is limited. This is necessary, Baron-Cohen argues, because the ability to predict the behavior of others, to which mindreading is a prerequisite, is essential to many of the roles predominantly performed by males. Males (allegedly as a consequence of their greater interest in systems; social systems are, after all, systems) are driven to seek status, and to do so they need to be able to manipulate others and control their behavior. Similarly, males need mindreading abilities to engage in trade. In both cases, the presence of mindreading in the absence of the affective component is advantageous, since mindreading allows for the manipulation of others, but a lack of compassion is necessary if this manipulative skill is to be given full rein (Baron-Cohen 2003, p. 120).

So to the extent that typical males possess the ability to empathize, their ability to mindread will be better developed than the affective component of empathy. One would expect, then, that the possessor of an extreme male brain would manifest a complete disregard for the well-being of others, perhaps coupled with weak mindreading skills. But suffers from autism and Asperger

syndrome exhibit nothing like this profile. Instead, they present almost the complete opposite picture: low or non-existent mindreading skills, coupled with a high degree of concern for others (Baron-Cohen 2003, p. 184; Kennett 2002).

Thus the extreme male brain theory of autism seems, *prima facie*, unpromising. I suggest that here, too, an awareness of a phenomenological approach to understanding would be much more fruitful. What is most striking about people with autism is the inability to 'latch onto' the social world, in the manner in which Dancy claims we latch onto moral concepts, and Merleau-Ponty (1962) claimed we latch onto our physical surroundings. It is for this reason that they are forced to substitute the inferior means of governing their social interactions by rules, rather than intuition. Autism seems most naturally described as a failure to grasp the social world from the inside, to grasp the lines of significance which stand out so clearly for most of us. A research program that attempted to interpret autism as a deficit in phenomenological *understanding* might prove much more fruitful than the extreme male brain hypothesis.

I have said nothing about Baron-Cohen's research allegedly demonstrating essential sex differences. Instead, I have aimed to show that even if he is right in claiming that there is a small but statistically significant difference in the degree to which males are better at systemizing and females at (what he calls) empathizing, we have no reason to expect this difference to translate into a male advantage in innovation, or in understanding the world. If the phenomenological conception of intelligence is correct, then systemizing has a smaller role to play in high-level cognition than Baron-Cohen thinks. However, there are good reasons to think that Baron-Cohen has not adequately demonstrated that these sex differences actually exist, or, more especially, that they are innate.⁵ A brief review of the empirical evidence he assembles for these claims is in order, to demonstrate the weakness of his case for the existence of these 'essential differences'.

His evidence is of two kinds. First, there is the evidence for the existence of psychological differences in adult men and women. Baron-Cohen's major piece of evidence for this difference (apart from anecdote, and the extent to which certain professions are male-dominated) consists in the results of his 'Systemizing Quotient' and 'Empathizing Quotient' tests. There are several things wrong with these tests. First, they were self-administered by Baron-Cohen's subjects; worse, they are tests in which it is quite easy to pick out the 'right' answers. Thus, if subjects wanted, for whatever reason, to present the profile of someone with good 'systemizing' skills and low 'empathy', they could choose to do so (simply claim to strongly agree with propositions like 'I can easily visualize how the motorways in my region link up', and disagree with claims like 'I find myself drawn more strongly to people than to things'). Second, though the tests claim to be probing systemizing and empathizing ability, and on that basis drawing conclusions about the sexes, in fact they

are often testing for the gender of the subject, by asking whether the subject is interested in activities which tend to be disproportionately associated with males or with females (cars, electrical wiring computers and other machines, sports and stock markets, on the one hand, and friendships and relationships, on the other).

The second set of empirical evidence consists of research into the relationship between fetal testosterone and what Baron-Cohen takes to be markers for empathy. This research is also flawed, though not as badly as the first set of findings, by its design. For instance, one of the researchers in an experiment to see whether neonates were more interested in human faces or in mechanical objects herself provided the stimulus face for the child to look at, despite the fact that, as Baron-Cohen (2003, p. 87) admits, it was difficult to disguise the babies' sex from her. More serious than this design flaw, however, is the supposition that greater interest in faces is evidence of greater empathy, or a greater disposition to develop empathy, or the assumption that larger vocabulary is also positively correlated with empathy. These, essentially unargued for, assumptions are questionable at best.

In any case, even if these sex differences are real, we have no reason to expect them to lead to a male superiority in technology, science and innovation. If males are better at systemizing, this is an ability which is likely to have few practical consequences, especially if Baron-Cohen is right in thinking that higher systemizing ability is bought at the price of lower empathizing. Systemizing is not the heart of (a certain kind of) intelligence, as Baron-Cohen thinks. Instead, it plays second fiddle to our ability, intuitively, as it were, to grasp what is relevant in a domain. So long as psychologists like Baron-Cohen remain in thrall to this view of intelligence, they, like the systemizers, will be blind to what really matters in their area of inquiry.

Notes

1. The conception of reason I have in mind is phenomenological only in the sense that it is commonly and rightly associated with a number of prominent philosophers who explicitly declared their allegiance to phenomenology, especially Maurice Merleau-Ponty and (the early) Heidegger. It is not phenomenological, more narrowly construed, for two reasons: first, because not all people who would describe themselves as phenomenologists would endorse it (at some stages of his career Husserl would probably have rejected it) and, second, because some philosophers who are not directly influenced by the phenomenological tradition would endorse it.
2. At least, this is the central claim which he actually *defends*. A much stronger claim is made at the beginning of *The Essential Difference*. On the very first page of the book, in italics and set off from the main text, we read.

The female brain is predominantly hard-wired for empathy. The male brain is predominantly hard-wired for understanding and building systems (Baron-Cohen 2003, p. 1).

This is, it goes without saying, literally incredible. Most naturally understood, the central claim holds that most of the 'female brain' is devoted to the 'hard-wiring' for empathy,

whereas most of the male brain is devoted to systemizing. It is easy to believe that Baron-Cohen is here exaggerating his own central claim, in order to sell more books and attract more reviews. More charitably, perhaps he was simply making a mistake: saying something he did not mean. Whatever the truth may be, this beginning bodes ill for a work with an avowed aim of contributing to an understanding of gender differences without inflaming prejudices.

3. In a similar vein, Baron-Cohen informs us that women should be proud ‘that there are things that most women can do that most men cannot do as well. Hosting a large party tactfully, making everyone feel included, is just one example of something that many men may shy away from’ (Baron-Cohen 2003, p. 12). This is no basis for equality. It is not an accident that there is no Nobel Prize for making people feel included. This is indeed one of the large set of important tasks which has been largely delegated to women, and for which they have received little acknowledgment. But if most women are excluded from making a contribution to the task of understanding and transforming the world, they will not be granted equality of status.
4. Indeed, as Dreyfus has pointed out, the rationalist tradition has always recognized the existence of non-systemizing cognition, but ‘only in women, usually in interpersonal situations, and has adjudged [it] inferior to masculine rationality’ (Dreyfus and Dreyfus 1988, p. 29).
5. It is worth remarking that Baron-Cohen’s conception of innateness is far from perspicuous. The notion with which he works is essentially negative: a trait is ‘biological’ (as he says) just insofar as it is the not the result of socialization (see, for instance, Connellan et al., 2000, pp.113–118). But since what evolves is not phenotypic traits as such, but phenotypic plasticity – i.e., a range of traits is generally selected for – the relative strength of a disposition in a neonate is not evidence for the ‘biological’ origin of a trait. Socialization is not a pattern of interferences, which obscures the underlying design of the infant: it is an essential part of the process whereby the phenotype is completed.

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