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Mindless versus mindful sociology: Models of mind in sociology and the social sciences

Abstract

This article deals with the dominant model of mind implicit or explicit in many of the social sciences and sociology. Following the lead of evolutionary psychologists John Tooby and Leda Cosmides, this dominant theory of mind is referred to as the 'Standard Social Science Model'. This model is described and a short history of it provided. A brief explanation for its dominance is also offered. The paper argues that this model is now obsolete and that scientific progress in sociology and the social science is being hampered by adherence to it. The major shortcomings of the model are identified. An alternate model of mind, the 'Integrated Model', is offered as a scientifically sounder one that offers sociology and the social sciences a way out of the rut they are currently in. The main features of the Integrated Model are discussed and the paper concludes with the promise that the model holds for sociology and the social sciences if it is adopted.

Introduction

This paper is concerned with the model of mind typically implied in social research, analysis and theory. Following the lead of writers such as Tooby and Cosmides (1992) and Brown (1991), it argues that the time has come for social scientists to abandon the model of mind implicit or explicit in much of their work and to adopt a model that is more consistent with the state of knowledge in the various mind sciences. As the wordplay in the title suggests, a lot of sociology and social science may be seen as 'mindless' – in two senses. Firstly, they are mindless because the model of mind they employ is a variant of the *tabula rasa* model, i.e. the mind is assumed has little or no content. Secondly, because many sociologists and social scientist proudly practise their own brands of *disciplinary apartheid*, they are content to be mindless of developments in other related fields and disciplines. This is often methodologically justified by arguments against *reductionism* and in favour of explaining the social by the social.

As a string of critics since the early 1960s has pointed out (cf. Fox 1968 and Wrong 1961 as early examples), there is a lot wrong with the social sciences' 'mindless' model of mind, and with their stance vis-à-vis developments in the natural, biological and mind sciences. This model and methodological stance has seriously retarded the scientific development of the social sciences. The need to abandon it grows more urgent by the day if the social sciences are to get

out of the rut in which they seem to be. This paper spells out some of the numerous inadequacies of the 'mindless' model and supports current calls to replace this with a more 'mindful' approach that is emerging from an integration of findings in the various mind sciences and evolutionary theory. This emerging model, in contrast to the mindless model, accepts that the mind is full of genetically derived content and structure. In addition, advocates of this model are mindful of the importance of striving to keep the model consistent with discoveries and theories across the full spectrum of the mind and related sciences.

The human mind is centrally implicated in all of social science. It is implicated in human action, consciousness and thought and in the societies and cultures that humans construct. This obvious and unavoidable fact has solicited a wide variety of responses. One approach has been to proceed without too much direct attention to the mind. This was the stance to which Levi-Strauss alluded thirty years ago when he asked an audience:

'Is it language which influences culture? Is it culture which influences language?' But we have not been sufficiently aware of the fact that *both* language and culture are the products of activities which are basically similar. I am now referring to this uninvited guest which has been seated beside us during this conference and which is the *human mind*. (Levi-Strauss 1972:71)

Many varieties of macro social theory provide examples of such 'mindless' or 'absent mind' approaches. Such theories typically employ aggregated and abstract concepts such as 'class', 'system', 'structure', 'discourse', all of which are detached from direct links to statements about the human mind or individuals. In the minimal recourse they have to mind, such theories see it as a reflection of macro systems or structures. In crude varieties of Marxism, mind is determined by the economic infrastructure; in crude functionalism, the requisites of the social system shape the mind.

Another response has been to incorporate selective features of the mind into social theories without much concern for the features that are omitted. The best example of this form of theorising is provided by Rational Choice Theory. This theory is based on the idea of the mind with certain inherent but unexplained features such as consciousness, intentionality, utility orientation and rationality. Emotions, irrationality, and the unconscious play little or no part in the theory.

A third response has been to accept that the mind is implicated in everything that social scientists are concerned with. The challenge then is to theoretically integrate the mind and the social in a coherent and valid way. In order to do so, theorists must state what constitutes the mind, and how mind relates to the social/cultural. There are broadly four ways in which theorists have proceeded in this regard:

1. The mind is viewed as a supernatural 'given'. Culture and society are seen as expressions of a divinely or in some way supernaturally given force behind mind.
2. It is conceded that mind is something natural, but is regarded as more or less a blank slate. Culture and society are seen as the chief determinants of mind. This approach comes down the 'mindless' or 'Standard Social Social Model' of which the present paper is a critique.
3. The mind is natural and moreover is genetically endowed with structure and content. Culture and society are then seen as largely determined by mind. There is a sense in which structuralists of the school of Levi-Strauss could be said to come perilously close to this position, though the bulk of theories of this ilk are specimens of the kind of 'biological determinism' to which social scientists have quite rightly objected.
4. Finally, there is the position, shared in this paper, that argues that mind is natural, but while regarding it as genetically endowed with structure and content, allow for a variety of complex relations between mind and culture and society. Mind, society and culture are co-determinants of each other.

The first category above covers 'idealistic' models to which Hegelian philosophy could be argued to belong. The third category embraces 'nativist' and 'biological determinist' models familiar from much of 19th century psychology and pseudo-psychology. These two approaches to the problem of mind and society will receive no further attention here since they no longer feature as serious contenders in the mind sciences or the social sciences.

The second approach sketched above is still widely encountered in the social sciences. In fact, it is probably the prevailing orthodoxy. It can be encountered under many different guises, from 'social determinism', 'cultural determinism', 'the post-structuralist and Foucauldian linguistic turns', and perhaps most notably the current dominance of the 'social constructionist' perspective in much of contemporary anthropology and sociology.

These models are so widely encountered that the generic model of mind they represent is clearly the dominant model in the social sciences. Because of the dominance and wide diffusion of this generic model, writers such as John Tooby and Lena Cosmides (1992) and Stephen Pinker have dubbed it the 'Standard Social Science Model' (SSSM). In the discussion to follow I shall refer to this model simply as the 'Standard Model'. As will be argued, despite the prevalence of this model of mind (and its concomitant and largely negative views on the existence of a 'human nature'), there are many reasons why the time is coming for it to be abandoned.

The last category above covers theories of the mind/society/culture relation which constitute the main challenge to the 'Standard Model'. These theories put forward a variety of models, variously labelled 'epigenetic', 'interaction' and 'integrated' models. Some of the models implied or embedded in

structuration theory and analytic dualism can also be included here (cf. Archer 2000). Tooby and Cosmides (1992) refer to their model as the 'Integrated Causal Model' (ICM). They regard this model as coherent and valid in terms of cross-disciplinary theories and findings and advocate its adoption by the social sciences. In what follows, I shall refer to all models of mind constructed on integrative principles by the generic label of 'Integrated Model'. As will become clear, this Model is still largely work in progress because the mind sciences are at a comparatively early level of development. The integration of their theories and findings thus generate contending models.

The Standard Model

The history of the Standard Model is to a great extent the history of the social sciences themselves and their struggle for recognition, autonomy, and legitimacy. Paradoxically, while the Integrated Model now seems our best way forward, the Standard Model emerged as a reaction to precursors of the Integrated Model. These precursors regarded the mind as the cause of human action and explained actions in terms of mental entities such as beliefs and desires. Mind was, following Darwin, naturalistically explained as a product of evolution. While this explanation appealed to many, it also evoked much opposition. So much so that the early decades of the 20th century witnessed a growing disenchantment with evolutionary, rationalistic and nativistic theories of mind, culture and society. This disenchantment and the resulting challenges emerged particularly strongly in psychology, anthropology and sociology. It was a development fuelled not only by scientific difficulties with the then existing theories but also by the desire to improve people and societies coupled with strong opposition to the reactionary political uses to which Darwinian theories had been put.

In their attempts to establish psychology as a science, pioneers such as J. B. Watson and B. F. Skinner sought to link observable inputs with observable outputs and in this way avoid recourse to unobservables such as beliefs and desires. Their work led them to view the mind, whether of pigeons, rats or humans, as something of a general learning device, minimally structured but good at associating stimuli and responses. It was assumed that the mind was basically 'equipotential': any perceptible stimulus could, with equal ease, be associated with any other perceptible stimulus or with any response in an animal's repertoire.

Watson accepted that there was some variation inherent in the minds of infants but he regarded external influences as capable of overriding it. For him the exogenous factors were supreme. This view is well expressed in his famous claim:

Give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select – doctor, lawyer, artist, merchant-chief and, yes, even beggar-man

and thief, regardless of his talents, penchants, tendencies, abilities, vocations, and race of his ancestors. (Watson 1930:104)

In anthropology, the work of Franz Boas was decisive in undermining 19th century 'Race Science' in which people and cultures were ranked in hierarchies of ability and levels of civilisation, with evolutionary explanations offered for these rankings. Boas accepted that all humans were biologically much the same, but he did not agree that similar cultural practices of different societies necessarily implied a common biological cause. In Durkheimian fashion he argued for explaining the cultural in terms of the cultural. He rejected the arguments for supposing that there were biologically evolved differences in the minds of the different 'races'. He was an early opponent of the very idea of race, arguing that there were no lines of descent binding existing human races into distinct hereditary types (c.f. Boas 1982 [1940] :276).

Boas and his former students Alfred Kroeber and Robert Lowie established an influential school of American anthropology that came increasingly to espouse an extreme form of cultural determinism. Under their influence, empirical evidence was gathered that provided strong support for the thesis that mind and behaviour were socially and culturally determined. Margaret Mead's (1928) *Coming of Age in Samoa* is the classic and most famous example of this kind of empirical validation. Mead's and similar work contributed in large measure to the spread and endurance of the Standard Model, especially in feminist theorising. It also had a profound effect on early US sociology (Richards 1989). Many early recruits to sociology were originally destined for religious careers but while sociology seemed to have cured them of their religious beliefs, arguments regarding the social/cultural determinism of mind and behaviour sustained and intensified their zeal to work to improve individuals and societies.

The notion that human sociality required its own autonomous level of theoretical explanation owed much to the work of Boas and Emile Durkheim. Indeed it could be argued that in its current social constructionist phase, modern sociology and its fashionable adjunct of cultural studies are Durkheimian through and through. The victory over nativist theories of human nature – in academic social science if not in the wider world – was thus won quite early on in the 20th century. A clear example of the way in which Durkheim contributed to the Standard Model of mind is his discussion of the categories which thinking presupposes, categories such as time, space, class, number, cause, substance, etc. Following Kant, Durkheim accepted that these could not be explained empirically. They could also not simply be accepted as inexplicable, they had to be accounted for. Two options were open: an evolutionary explanation or a sociological explanation. Durkheim opted for the latter. He claimed: 'The first logical categories were social categories, the first classes of things were classes of men into which things were integrated. It was because men were grouped and thought of themselves in the form of groups,

that in their ideas they grouped other things'. For Durkheim the fact that the categories are the product of social factors is evidenced by such facts that '... societies in Australia and North America where space is conceived in the form of an immense circle, because the camp has a circular form' (Durkheim 1976:11). Time for Durkheim can only be grasped, indeed only exists, through the round of social activities. 'A calendar expresses the rhythm of the collective activities, while at the same time its function is to assure their regularity' (p 10).

Following Durkheim, systematic and holistic thought is rooted in the perceived unity of society. He offers similar accounts for the origin and content of other categories and concepts. As his argument runs, the structures of human relations and society impose themselves on the human mind. The mind is furnished through this and expresses itself in these terms. The differences between societies explain the differences in mind between members of difference societies as well as the similarities in mind within societies.

Probably driven by his own success and the practical need to establish sociology as a discipline *sui generis*, Durkheim's sociology gradually became stronger sociology and weaker theory. Commenting on this evolution, Gehlke (1915:86) wrote, '... so far as the individual appears at all in Durkheim's later theory, he has become only a body; he is no longer a soul. His soul is the mind of society incarnated in his body. The social mind is all the mind that exists; and in this sense the social is the only real'. This comment provides a good summary of the essence of the Standard Model. This Model crystalized out of the confluence of ideas such as those flowing from Durkheimian sociology, Boasian anthropology and Watsonian behaviourism and was institutionalised as the dominant model in the social science by the late 1950s and early 1960s. It has been the working model in much of social science since then.

Its presence is clearly evident in contemporary theory where it can be discerned as the taken-for-granted model of mind in the influential line of social theorising that links structuralism, post-structuralism, feminism, social constructionism, textualism and postmodernism. These are all, to greater or lesser extent, 'mindless' in the manner previously noted. What unites them is an extreme *tabula rasa* view of mind. There is little or nothing that is inherent and what becomes inscribed is easily erased and replaced by new inscriptions (c.f. Archer 2000:19). Mind is a point of intersection of external networks and flows of information. The social, cultural and linguistic determination of mind (and hence self, identity and thought) is total and as fluid as the networks and flows of information. The essence of this model is aptly captured in Rorty's (1989:185) statement, 'Socialization ... goes all the way down'.

Key elements of the Standard Model

The Standard Model accepts the minimum of biological givens that are necessary to sustain its theoretical claims: humans are genetically endowed with a few basic drives – survival, food, comfort, sex, companionship, etc, – and a

general capacity for learning. Consistent with this minimal innatism, Berger and Luckmann (1967:66) write: 'Man's instinctual organization may be described as underdeveloped, compared with that of the higher mammals. Man does have drives, of course. But these drives are highly unspecialized and undirected'. And, as for the capacity for learning: '... there is no human nature in the sense of a biologically fixed substratum determining the variability of socio-cultural formations. There is only human nature in the sense of anthropological constants (for example, world-openness and plasticity of instinctual structure) that delimit and permit man's socio-cultural formations. ... While it is possible to say that man has a nature, it is more significant to say that man constructs his own nature, or simply, that man produces himself'. (Ibid. 1967:67)

Extreme empiricist versions of the Standard Model imply *tabula rasa* or bucket theories of mind. More sophisticated versions, those that have tried to accommodate the model to at least some findings from cognitive science, appreciate that to be capable of the many learning tasks that the mind is capable of, it must have a very complex structure. The simple structure of the *tabula rasa* has given way to the complex structure of a general purpose learning device that depends on society and culture for its programming and contents (cf. Geertz 1973:44; Tooby and Cosmides 1992:29). The mind, according to this version of the Standard Model, has a great capacity for learning but has no significant innate biases or channels of information acquisition and development. It is equipotential. It will indifferently assimilate almost anything that is presented to it or that it encounters. It will do this in any order and at any time in development.

This adds up to a mind that is highly plastic and programmable. What is largely responsible for furnishing and structuring the mind are inputs from the natural, social and cultural environments. Because, in terms of this model, so little of what humans think and do flows from the commencing mind, humans strictly speaking do not have a nature in the sense that other animals have. Humans are held historically and collectively to have constructed their own nature. Each generation has versions of this constructed nature imposed on it and in its own way adds to this construction process and participates in its reproduction.

In addition to its claim that the human mind is fundamentally a general learning device, the Standard Model also sees the human mind as everywhere basically the same. There are no biological ethnic or racial differences as regards the mind. Apart from differences due to circumstance, society and culture, at the collective level the mind is held to be the same everywhere. In other words, the Standard Model accepts the assumption of the *psychic unity of humankind*. While it seems correct in doing this, its weakness is, as will be indicated, that it can offer no explanation for this assumption and cannot promote it to a statement of fact as the Integrated Model attempts to do.

In terms of the Standard Model, the infant is born with a strong general capacity to learn but no innate guidance regarding what to learn. Its own learning is initially largely accidental and haphazard and would make little progress if it were not for the fact that various teaching agents are available to it. It is they who structure learning activities and provide the information the infant requires at each stage of its cognitive development. This relationship between the agents of socialisation and the infant is employed by the Standard Model to explain both the differences between individuals and the similarities between members of groups and cultures. The differences between groups and cultures are explained by their unique social and cultural histories.

Criticism of the Standard Model

As indicated above, the Standard Model emerged in a particular moral and political climate as well as a time when the main social sciences were establishing themselves globally as useful and legitimate disciplines with their own irreducible subject matter. The adoption of the Durkheimian methodological principle of explaining the social in terms of the social (or the Boasian *Omnis cultura ex cultura*) led to important and profound insights into the relations between macro phenomena and between society/culture and the individual/mind.

For a time, especially during the 1950s and 60s, behaviourism and cultural anthropology provided a steady stream of empirical findings that provided scientific support for the Standard Model. But alongside this support, the older but at that time eclipsed nativist model was beginning to stage a come-back in a new form and with its own emerging body of empirical evidence. The balance of support shifted in favour of the nativist model during the 1970s due in large part to the confluence of findings and theorising in such fields as biology, ethology, cognitive psychology, developmental psychology, neuro-science, and the new sciences of sociobiology, computers, information and artificial intelligence.

According to some commentators, the evidence and arguments against the Standard Model were so strong by the end of the 70s that it has become something of a puzzle to explain the longevity and continuing dominance of the Standard Model in the social sciences. This adherence to an outmoded, refuted model of mind runs counter to scientific method and expectation and merits serious treatment by the sociology of knowledge.

Part of the explanation for the persistence of the Standard Model has no doubt to do with the affinity between this Model and Marxism and Feminism, two schools of thought that for theoretical and political reasons were strongly committed to environmental explanations of mind and strongly opposed to essentialism. The affinity between the Standard Model and the ideologies of the welfare state, socialism and communism also contributed to sustaining it.

The main explanation for its longevity, however, is probably the manner in which it was able to isolate itself by strong disciplinary boundaries from theories and empirical data emerging in the new disciplines mentioned in the previous paragraph. As Cosmides, Tooby and Barkow (1992:4) argue, for historical, methodological and political/practical reasons, the social sciences have in the main eschewed the scientific principle of cross-disciplinary consistency and conceptual integration. Persisting along the Durkheimian and Boasian tracks, the social sciences typically do not expect their practitioners to take stock of findings in other disciplines and reductionism is tabooed. Social science theories are consequently rarely evaluated on the grounds of conceptual integration and multidisciplinary and multilevel compatibility.

The cognitive isolation that the social sciences have fashioned for themselves has insulated the Standard Model from findings and arguments that, under normal scientific conditions, would have ensured that the model remained consistent with new knowledge. The upshot of this is that this model is so seriously flawed that it can be argued to be obsolete. Nothing less than a thorough Kuhnian scientific revolution is called for. It goes without saying that to go this route also requires that the social sciences ditch their unscientific proscriptions against reductionism, interdisciplinary consistency and conceptual integration. Theories that lean upon the Standard Model may well find themselves outflanked as a younger generation of social scientists increasingly borrow in uninhibited fashion from findings of the 'hard sciences'.

What then are the major and fatal flaws in the Standard Model? The following are among the main criticisms that have been levelled at it:

1. The Standard Model is 'oversocialised'. It recognises that humans are born with a capacity for culture (Geertz, 1973; Montagu 1968; Sahlin 1976). However, while the term 'capacity' can be read to imply both the capacity to acquire culture and the capacity to generate culture, the Standard Model typically only focuses on the former. This failure to deal adequately with humankind's culture-generating capacity underlies the many criticisms of Standard Model texts as advancing an 'oversocialised' conception of humankind (c.f. Wrong, 1961). At its worst, it portrays human beings as dupes or puppets of their social environment. The Standard Model of mind emerged in sociology as an answer to the Hobbesian question of social order. It held that because of the kind of minds they have, humans internalise social norms and conform to social expectations. This model of mind denies humans the very possibility of being anything but thoroughly socialised beings. In answering the Hobbesian question, it actually turns it into a non-question.

The Standard Model fails to recognise that humankind's perceptual and cognitive system implies a radical discontinuity between informational input and the sense that is made of this input, the gap that necessarily exists

for humans between information and knowledge. Knowledge implies the transformation of the input into something that is meaningful for the individual; this is an operation of the mind, it is not given in the information, and cannot be given as such. This means that humans are, and have to be, constitutionally creative in all learning that is more than the simple stimulus-response type.

2. The Standard Model's description of the infant mind and early learning is contradicted by empirical findings from child and developmental psychology. From the perspective of the Standard Model, infants are relatively passive learners, conditioned and shaped by things done to them. They are taught, instructed and socialised by various external agents. Almost nothing is attributed to the infant or its own activities. Little is written about resistance to learning or the creative use of what is offered in learning. The Standard Model's image is contradicted by compelling evidence that from birth the infant is an active, self directed and self-motivated learner. Infants are actively involved in the construction of their own representations (cf. Carey and Gelman 1991). The infant's spontaneous attention to external stimuli together with the selective and structured nature of its attention behaviour, implies more innateness of mind than the Standard Model allows. The infant has an innate ability to learn and its learning behaviour is so predictable, keen, persistent and patterned that it can be credited with having an 'instinct to learn' (cf. Fox 1975; Gould and Marler 1987; Marler 1991). This instinct is clearly manifest, for example, in early spontaneous exploratory, exercise and play behaviour as well as in the child's self initiated mimicry of adult behaviour. It is also manifest in the ease with which certain things are learnt – perhaps the most notable example being that of language – as opposed to the resistance shown to learning other things. The child is clearly not an equipotential learner equipped with a general learning mechanism.
3. The Standard Model fails the 'solvability' test. This test, as described by Tooby and Cosmides (1992:110), requires that the model convincingly account for the problems that humans routinely solve. These problems are of various sorts and their solutions equally various. They include such diverse problems as evading predators, avoiding incest, knowing what is nutritious and what is not, judging distance, determining quantity, learning language, knowing when infants require assistance, choosing an appropriate mate, avoiding being cuckolded, classifying things, and so on. The Standard Model fails the solvability test because it cannot account for the way in which these and other human problems are solved. At best it provides a partial account. This failure of the Standard Model was originally and most famously demonstrated with reference to the problem of language acquisition. The failure was first noted by Chomsky (1957) who studied children's language acquisition and discovered that all normal

children learn to speak fluently even with minimal exposure to language or direct language instruction. He found that the linguistic inputs to which children were exposed were insufficient on their own to account for their language acquisition. This could only be accounted for if it was acknowledged that they had some innate learning device or algorithms that guided language learning. What Chomsky had discovered was a major problem in Standard Model accounts of learning. Subsequent research has revealed that this problem is not only confined to language learning, but is related to learning about a host of other things. These include the way a child learns the meaning of facial expression and how a child comes to attribute beliefs and intentions to other people. It is now increasingly being accepted that to adequately account for how humans learn and solve routine problems, innate guidance systems or constraints must be supposed to be present in the mind. Hence the mind must have more innate structure and content than is granted by the Standard Model.

4. The Standard Model fails the 'evolvability' test (c.f Tooby and Cosmides 1992:110). The Darwinian evolutionary paradigm has developed and survived to be the only contender able to offer a plausible explanation for the rich diversity of living forms (Dawkins 1986). It is therefore to this paradigm that mind scientists must turn if they are to test their models of mind. For a model to be plausible, it must be possible for the mind it describes to have evolved in terms of the factors central to evolutionary theory – reproduction, inheritance, mutation and natural selection. The Standard Model implies that the innately richly filled and structured ape precursor to the human mind evolved into humankind's largely empty and unstructured mind. Those who have tried to test this proposition against the theory of evolution find that it fails. It is not plausible to suppose, as the Standard Model requires, that a large number of adapted and functional ape 'instincts' regarding such things as food preferences, health maintenance, predator identification and avoidance, self-defence, reproduction, sexual behaviour, infant-care, nest building, social interaction, communication, and so forth, have all been equally and totally eliminated from the human mind. The argument that humankind's increasing reliance on culture led to some sort of 'bursting', 'erosion' or 'erasing' of 'instincts' is unconvincing. It might, conceivably, have had this effect on some instincts, but on all, and all to the same extent? This is highly improbable. There is no reason to suppose that culture is not an augmentation to some 'instincts' and so has, in fact served to preserve these. Even if some 'instincts' were 'eroded' by increasing reliance on culture, it makes more sense in evolutionary terms to see some 'instincts' as more eroded than others, some might have 'burst', while others may have been retained fairly intact. It is also possible, as seems the case with language and social and cultural learning, that some new 'instincts' have been acquired since Homo sepa-

rated from Pan. A further point worth making related to the 'evolvability' test is that the mind postulated by the Standard Model would have been selected 'against' not 'for' by natural selection. If we were indeed equipped with a mind as heavily dependent on socio-cultural programming as the Standard Model suggests, we would be easily exploited and misled as to what was truly in our own as opposed to our competitor's interests. Such a mind would have been quickly eliminated by minds with some intrinsic guidance as to what was in their best interest and able to detect and resist exploitation (cf. Pinker 1997:210).

The above constitute a brief and by no means complete set of the criticisms that have been levelled at the Standard Model. They make for a compelling case that social science can no longer maintain its insularity vis-à-vis the burgeoning fields that cluster around cognitive studies and evolutionary biology.

The Integrated Model

As the name of this model suggests, it is a conception developed from theoretical arguments and empirical findings from all disciplines that directly or indirectly study the mind or mind related matters. The central disciplines are evolutionary psychology, cognitive psychology, evolutionary biology, developmental psychology, neurobiology and artificial intelligence. Advocates of this model regard it as more valid than the Standard Model because it is the result of the continual attempt to develop an understanding of mind that is based on the integration of plausible theory and well-supported empirical findings. Proponents of the model accept that it is at an early stage of development. There is much that is controversial, and a great deal more that is still not known.

Advocates of the Integrated Model accept that the mind is the product of biological evolution and, as a consequence, has to be explained in the same way that other biological organs are. According to this model, the mind consists of evolved mechanisms that are specialised for solving evolutionary long-enduring adaptive problems. It is postulated that these mechanisms have content-specialised representational formats and algorithms (Tooby and Cosmides, 1992:34) that generate the specific mental contents and structures that shape human social life and culture.

Whereas the standard model assumes a general capacity to learn and says little about the nature of this capacity, apart from asserting that it is general, the Integrated Model, regards this capacity as endogenously stimulated and structured by evolved mechanisms. Evolutionary reasoning suggests, given the imperative humans have to learn, that a human instinct to learn is part of humankind's genetic endowment. This postulated instinct has been confirmed by child and developmental psychology since the early 1970s. Today it is widely accepted that the human infant is born with a strong instinct to learn (c.f. Fox 1975; Gould and Marler 1987; Marler 1991).

In place of the passive, equipotential infant of the Standard Model, the Integrated Model posits an active and constrained infant, one who not only receives and processes information, but one who actively seeks stimulation and poses question to its environment. The human child is a learner whose curiosity, exploration, repetition, play, practice, and actions generate information that make it to a significant degree self instructing, educating and socialising.

Evolutionary reasoning suggests that in all learning species, the newborn would be shaped and selected to pay particular attention to acquiring the knowledge that its species is most dependent on for survival. In the case of humans, a great deal of this knowledge has to be derived from other humans and from language and culture. It is therefore not surprising that infants seem to be born with a rich array of algorithms which boil down to instructions such as: 'Imitate and learn from the members of your species' and 'learn the language you hear around you'. Research confirms that babies are attentive to their care-takers, pay great attention to the human face and human actions, and devote a lot of attention to listening to and imitating vocal sounds and mastering language.

As was noted earlier, while both the Standard Model and the Integrated Model accept, in opposition to racist theories, that the minds of all humans are essentially the same, only the integrated model is able to '... offer the explanation for why the psychic unity of mankind is genuine and not just an ideological fiction...' (Tooby and Cosmides 1992:79). The integrated model is able to do this because of its incorporation of biology and evolutionary theory. The explanation begins with the fact that humans are complex outbreeding organisms capable of combining gametes from any healthy male or female from anywhere on earth to produce a normal human being. For this to be possible, evolution must have equipped the human genome with mechanisms which ensure that no matter what ovum and spermatozoon are combined, the offspring will have a fully functional and normal heart, lung, kidney, brain, etc., and develop in the environment it is placed in in the way that any other offspring would. It is no small irony, as Tooby and Cosmides (1992:79) wryly note, that while supporters of the Standard Model often accuse those partial to biological and evolutionary explanations of being conservative right-wingers who ascribe the differences there are between individuals, groups and classes to genetic differences, it is the latter who are able to offer the only sound explanation there is for the psychic unity of humankind.

The central idea in the Standard Model that the human mind is a general learning device is replaced in the Integrated Model with the claim that the mind consists of a number of discrete modules in addition to an integrating higher level cognitive system. It is argued that a general purpose problem solving mind might be able to solve a few problems speedily but could not do so across the full range of problems that routinely face humans, because these are too diverse. To do what it does, the mind must be packed with a variety of problem

solving devices, each designed to deal with particular problems or sets of problems.

The propagation of this claim is usually dated from the appearance of Jerry Fodor's book *The Modularity of Mind* published in 1983. In this book Fodor reasoned that if the mind were a general learning device it could not do the things we know it does. Without selecting and guiding systems, the mind would be slow and uneconomical. To survive, humans require both fast reactions and time consuming information gathering and processing. According to Fodor, the mind has systems to meet both these requirements. As he sees it, the mind is split into perceptual and cognitive systems. He regards the perceptual systems as modules. A module according to Fodor has the following characteristics: 1) Domain specificity, 2) Informational encapsulation, 3) Obligatory firing, 4) Fast Speed, 5) Shallow outputs, 6) Inaccessibility, 7) Characteristic ontogeny, 8) Dedicated neural architecture, 9) Characteristic pattern of breakdown (c.f. Fodor 1983; Segal 1996). The visual system provides a clear example of what Fodor means by a module. The various perceptual modules, in the Fodor model, provide input to the cognitive system, which is a combinatorial general processor. The one-way nature of the relationship between the cognitive system and the perceptual modules is illustrated by visual and other perceptual illusions. We know cognitively that we are subject to such illusions but this awareness does not enable us to correct the perceptual system or prevent us from continuing to perceive the illusions.

Fodor's modular conception of mind had been extremely influential and productive. It has been developed far beyond his original conception and in directions that he himself now finds unacceptable. An extreme and, to Fodor, unacceptable development of his ideas is the work by the evolutionary psychologists Tooby and Cosmides (1992). For Tooby and Cosmides the mind can only be adequately accounted for by viewing it as a product of biological evolution. On this view, the mind is like any other biological organ and has been selected and shaped to serve particular life and reproduction supporting functions. As an evolved and adapted organ, the nature of mind is best revealed if it is considered in terms of the environment in which it emerged and for which it adapted. For evolutionary psychologists such as Tooby and Cosmides, the time from about 6 million years ago, when the evolutionary line leading to modern *Homo sapiens* branched from the one leading to modern Chimpanzees, is crucial for understand the mental attributes that made humans so unique.

Tooby and Cosmides argue that the human mind consists of a large number of mechanisms that assist humans to solve many of the important and enduring problems that they had to contend with during the past 6 million years of their evolution. By imaginatively placing humankind's ancestors in the kind of physical, ecological and social environment in which they evolved, Tooby and Cosmides (1992) have identified many of what they regard as among the most pressing and enduring problems that have challenged humankind. These

include: the need to recognise objects, avoid predators, avoid incest, avoid teratogens when pregnant, repair nutritional deficiencies by dietary modification, judge distance, identify plant foods, capture animals, acquire grammar, attend to alarm cries, detect when their children needed assistance, be motivated to make that assistance, avoid contagious disease, acquire a lexicon, be motivated to nurse, select conspecifics as mates, select mates of the opposite sex, select mates of high reproductive value, induce potential mates to choose them, choose productive activities, balance when walking, avoid being bitten by venomous snakes, understand and make tools, avoid needlessly enraging others, interpret social situations correctly, help relatives, decide which foraging efforts have repaid the energy expenditure, perform anticipatory motion computation, inhibit one's mate from conceiving children by another, deter aggression, maintain friendships, navigate, recognise faces, recognise emotions, cooperate, and make effective trade-offs among many of these activities.

In terms of orthodox evolutionary reasoning, which holds that form follows function, Tooby and Comides reason that genes and gene combinations which facilitated the solution of the above and other critical recurrent problems were favoured by natural selection. Natural selection processes accumulated and preserved these over time to generate the domain-specific cognitive mechanisms that Tooby and Cosmides hypothesise modern humans are equipped with. These domain-specific mechanisms have been shaped by particular problems and in their turn serve to help solve problems of the sort that shaped them. Empirical research to verify the existence of these postulate 'domain-specific mechanisms' has accelerated during the past few years and there now exists a considerable body of data to support the contention that human reasoning and problem solving in a number of domains is indeed supported by innate mechanisms. Many researchers refer to these as modules and extensive work has been done on a number of these modules. These include: the Language module, the Theory of Mind module, the Social Exchange module, the Mate Selection module, the Reproduction and Parenting module, the Biological Knowledge module and the Physical Knowledge module.

A somewhat different development of Fodor's modularity idea is found in the work of developmental psychologist Karmiloff-Smith (1992). For her, the conception of mind which seems most compatible with the legacy of her mentor Jean Piaget, her own and her colleagues' research, as well as the findings of contemporary developmental psychology, is one that combines elements of nativism and constructivism. She regards the nativism versus constructivism battles as unhelpful: '... I do not choose between these two epistemological stands, one arguing for predominantly built-in knowledge and the other for a minimum innate underpinning to subsequent domain-general learning. Rather, I submit that nativism and Piaget's constructivism are comple-

mentary ... the ultimate theory of human cognition will encompass aspects of both'. For Karmiloff-Smith, human learning is innately constrained, i.e. there are innate biases and triggers to learning specific things but the learning itself is still heavily dependent on experience, both initiated by the child and by others agents and the environment. For her the mind is innately structured to become modularised in particular ways given the appropriate environments and learning opportunities but it is not initially modularised. The integrated nature of her conception of mind is captured in her words, '... one can attribute various innate predispositions to the human neonate without negating the roles of the physical and sociocultural environments and without jeopardizing the deep seated conviction that we are special – creative, cognitively flexible, and capable of conscious reflection, novel invention, and occasional inordinate stupidity' (Karmiloff-Smith 1992:1).

The synthesising work of such writers as Tooby and Cosmides (1992) Karmiloff-Smith (1992), Spelke (1991) and Gelman (1991), constitutes variants of the Integrated Model in the making. Their work is partial and still being developed but in seeking to integrate theory and data across disciplines vertically and horizontally, they are beginning to fill in the details of the emerging Integrated Model.

To summarise, this model accepts that the human mind is the product of a complex interplay of genetic endowment, natural/social/cultural environmental inputs and self-activity. According to the model, the mind is an evolved physical organ which has emerged and been shaped by evolutionary processes to perform a number of functions. The mind is genetically endowed with content and structure. It has functionally specialised mechanisms that contribute to the solution of particular adaptive problems. Among the latter are mechanisms for learning language, social interaction and cultural acquisition. The mind initiates learning and is active in its own formation in the face of inputs which it generates or which emanate from the physical, social and cultural environment.

As was discussed in the first part of this paper, the social sciences have been developed on the basis of a faulty model of mind. This has led to the development of theories that are at odds with reality and has contributed to the ridicule that is increasingly heaped on the social sciences because of their lack of progress. Strongly linked as they are to a now defunct and scientifically discredited model of mind, the social sciences and sociology have much to gain from abandoning this model and adopting the Integrated Model. The following are some of the implications and gains that await sociology if the paradigm shift is made:

1. The conventional approach to socialisation will have to be abandoned. It is a caricature of the actual processes involved yet it continues to be taught to generation after generation of sociology students and is used as the easy explanation for all sorts of human behaviour, whether conformist or devi-

ant. Conventional socialisation theory is overly cognitive and socially deterministic. The Integrated Model, with its inclusion of innate dispositions and processes as well as its recognition of individual autonomy and the unconscious together with an appreciation of the non-social nature of a great deal of learning, provides the required insights for the development of a sounder account of socialisation.

2. The Integrated Model of mind allows sociology to bury the erroneous and misleading proposition that humans have no nature but make their own nature. The Integrated Model makes it clear that like all living forms, humans have a nature and that this nature is the result of humankind's evolution. According to this model, humans have evolved to be a species that learns from its own experiences, its interactions with conspecifics and from information that is linguistically transmitted and stored. The nature of human nature is discernible in the many universals that characterise human societies and cultures. It is discernible in the ease with which people from different societies, cultures and even ages are able to understand each other. It is also discernible in the characteristic and modular way humans seek and process information and in the responses they exhibit to this information. A great deal of what counts for an animal's nature has to do with how its brain and nervous system are wired and with the information processing and module developing mechanisms it is genetically endowed with. This is equally true for humans. Our nature is discernible in the way in which our minds are structured and the ways in which they generate, seek and process information. After a long and unproductive period of denying that humans have a nature, it is time that sociology recognised that humans do indeed have one. Describing and understanding this nature will bring the social sciences into closer alignment with the natural sciences and so end once and for all the unproductive separation that exists between them.
3. The adoption by sociology of the Integrated Model will encourage the development of an evolutionary and paleo-sociology that will seek answers to the many questions which current sociology, based as it is on the Standard Model, leaves begging. Though it is obvious in terms of evolutionary theory that humans have evolved from a non-cultural to a cultural mode of existence, current sociology proceeds as if culture was immaculately conceived and is totally arbitrary. The cultural mode of existence is always assumed and attention devoted to the effects of culture and cultural change. Studies of primates and the great apes as well as hominids and humans will enable paleo-sociology to account for the origins and forms of the various social institutions and provide a sounder theory of culture than currently exists.
4. Elements of the Integrated Model have already called into question many sociological ideas based on the Standard Model in the fields of gender

studies, family studies, sexuality and human reproduction. This is hardly surprising since these fields more than others have the greatest difficulty separating the biological from the social/cultural. Adopting the Integrated Model will contribute greatly to these fields of study and allow currently avoided or badly answered questions to be attended to, questions such as those regarding the origin and reasons for male domination, the ubiquity and strength of nepotism, the determinants of human sexuality and gender differences, etc.

5. The Integrated Model of mind will build on the considerable achievements of sociology but offers the theoretical correctives and cross-disciplinary connections that are currently missing. It will add the necessary evolutionary and biological dimensions that are needed if sociologists are to produce comprehensive and more valid theories for important social phenomena such as war, violence, crime, racism, ethnocentrism, domestic violence, child abuse, rape, drug addiction, suicide, disease and illness, etc. The Integrated Model will encourage cross-disciplinary collaboration in accounting for and tackling complex human problems. It will also serve as a means to separate the wheat from the chaff in social theory and halt the ongoing proliferation of concepts and *isms*. It has been said that in sociology there are more approaches than arrivals. Through testing concepts and theories against the Integrated Model and against established findings and theories in other branches of science, sociology and the social sciences generally have a chance to have fewer approaches but more arrivals.

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