EMPATHY, CRUELTY AND THE ORIGINS OF THE SOCIAL BRAIN

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TWO VERSIONS OF HUMAN NATURE

The term "human nature," as I understand it, refers to a bundle of innate and universal human faculties and dispositions that serve to distinguish humans from other animals, and normal people from various kinds of abnormal people. The contents of the bundle alter from one historical period to the next and among intellectual communities. Yet is possible to identify a canonical version of human nature that is (or *was* until recently) the taken-for-granted knowledge of the social and behavioral sciences, psychiatry, and the law. This version originates in Enlightenment debates regarding the nature of the mind its relation to earlier mind-like conceptions (Ryle 1949: 22-23). For convenience, I call this version "Human Nature 1.0." In its most basic form, Human Nature 1.0 is associated with four features:

> 1. Mind is the body's command-center, theater of self-awareness, and agency of self-identity and continuity.
> 2. Normal people are rational.
> 3. Normal people are self-interested: seeking pleasure and gratification and avoiding pain and distress.
> 4. Minds are self-contained. "[M]ental happenings occur in insulated fields, known as 'minds', and there is, apart from telepathy, no direct causal connection between what happens in one mind and what happens in another. Only through the medium of the public physical world can the mind of one person make a difference to the mind of another. The mind is its own place and in his inner life each of us lives the life of a ghostly Robinson Crusoe. People can see, hear, and jolt one another's bodies, but they are irremediably blind and deaf to the workings of one another's minds and inoperative upon them" (Ryle 1949: 13).

Recent developments in cognitive and social neuroscience research have encouraged scientists and their audiences to re-contextualize these features. The new version, still emerging, can be called “Human Nature 2.0” and summed up as follows:

1. Mind becomes a visible epiphenomenon of the social brain. It is too early to talk about the relationship between mind and brain in strictly deterministic terms however.
2. Humans are rational *agents*, as assumed in Human Nature 1.0. At the same time, minds and brains (the seat of human agency) are *products* of a higher and more stringent kind of rationality, natural selection. A person can be considered rational to the extent that, on a given occasion, her intentions, purposive behavior, and the material results of her goal-directed action are consonant (“sensible”) and proportionate according to the standards of her community. Natural selection is rational in that it is determined a ruthless cost-benefit calculus (reproductive success).
3. The “hedonistic calculus” of Human Nature 1.0 is unaffected.
4. The most striking difference between the two versions concerns the mechanisms through which minds/brains communicate. In version 1.0, minds know other minds only *indirectly*, through signs and symbols, encoded in language, gestures, and purposive behavior. In version 2.0, there is an additional mechanism: minds are routinely in *direct* contact, via neural resonance, mirroring, and empathy.

THE PREHISTORY OF EMPATHY

The idea that brains and minds might interpenetrate reprises nineteenth century medical discourse and debate on suggestion, hypnosis, and mental contagion. Jean-Martin Charcot claimed that his clinical studies of Mesmerism, hysteria, and psychogenic trauma had led him to believe that the hypnotic state is evidence of a biological diathesis. His claim was contested by Hippolyte Bernheim, who

believed that hypnosis is a form of suggestion, and that suggestibility is both universal and normal, notwithstanding the observation that highly suggestible people are more credulous than others. Bernheim defined “suggestion” very broadly, as an “act by which an idea is introduced into the brain and accepted by it.” It occurs in two forms: in *hetero-suggestion*, ideas pass from one mind to another; in *auto-suggestion*, ideas emerge spontaneously within the mind, where they become associated with particular sensations, emotions, and images. Auto-suggestion might be a source of distress and even psychosomatic disorders, but it is not intrinsically pathological (Bernheim 1980/1891: 18, 22).

Bernheim’s conception of hetero-suggestion was the basis for Gustave Le Bon’s influential monograph, *La psychologie des foules* (1895). Le Bon believed that French society was undergoing a massive and unfortunate transformation, that could be traced to the accession of the masses, the *classes populaires*, to political power, The masses want to “utterly destroy society as it now exists, with a view to making it hark back to that primitive communism which was the normal condition of all human groups before the dawn of civilization” (Le Bon 2002/1895: ix-xi; also Nye 1975; van Ginneken 1992: ch. 4). Rationality is a trait of the civilized, autonomous individual. The masses are not individuals in this sense, but rather creatures of a formation called the ‘crowd’, *la foule*, Once he is part of a crowd, the person “acquires, solely from numerical considerations, a sentiment of invincible power which allows him to yield to instincts which, had he been alone, he would perforce have kept under restraint.” His mind and brain become permeable to other minds and brains, and he loses his conscious personality. He now descends the evolutionary ladder. “Isolated, he may be a cultivated individual; in a crowd he is a barbarian…. He possesses the spontaneity, the violence, the ferocity … of primitive beings [and can] be induced to commit acts contrary to his most obvious interests…” (Le Bon 2002/1895: 6 and 8).

Le Bon’s accepts Bernheim’s thesis that, to varying degrees, everyone is suggestible. However he has no interest in the expression of suggestibility in

unexceptional circumstances. And this makes him different from Bernheim. Indeed Boris Sidis, a Harvard psychiatrist and authority on suggestion, criticized Bernheim for defining the trait so broadly as to include most mental activities (Sidis 1898). In practice, Bernheim did very little to challenge the idea of the autonomous, self-contained individual. When he discusses suggestibility, he mentions contagious yawning, the psychosomatic symptoms that can be induced by auto-suggestion, and his efforts to reverse of these symptoms through clinical hetero-suggestion. Human Nature 1.0 remains unaffected.

During the same period, an analogous notion emerged in Germany. Theodor Lipps identified a psychophysical process, *Einfühlung*, superficially similar to Bernheim's notion of 'indirect' suggestion, a spontaneous response to sensory stimuli producing an 'inner imitation'. This is Lipps' description: I observe someone's facial expression of affect. And "there exists within me a tendency to experience in myself the affect that naturally arises from that gesture". When there is no obstacle, the tendency is realized and the subjective meaning of the affect becomes my experience of the affect. *Einfühlung* is 'positive' when it does not conflict with my own character and 'negative' when there is conflict. Even when there is conflict my tendency to experience his affective state remains. Thus a person stares at me in an arrogant way. "I experience within myself the arrogance contained in that look. … My inner being objects; I feel in the arrogant look … a denial of my personality." Within myself, I resist the negative *Einfühlung* and it is this effort contributes (developmentally) to the ontogenesis of the self. It enables subjectivity to separate from the selves that it observes and, so, empathically experiences (Jahoda 1995: 155-159; Pigman 1995: 242-243; Lipps 1903: 193, Pigman's translation).

Lipps' conception of positive *Einfühlung* is similar to the idea of "sympathy" described by earlier writers, notably David Hume and Adam Smith (Penelhum 1993: 134-135). (Lipps had translated Hume for publication in Germany.) In 1909, Edward Titchner introduced Lipps' notion to Anglophone readers as

"empathy," but with a significant alteration. Unlike Lipps, he makes an explicit distinction between empathy (the capacity to fully comprehend the situation of the observed individual) and sympathy (the capacity to share the feeling of the observed individual). By the 1930s, Titchner's distinction has entered psychological discourse and, soon afterward, is absorbed into the everyday language of educated people. The distinction is both analytical and moral. Empathy is a morally neutral state – I comprehend Zande witchcraft beliefs without wishing to promote them. Sympathy readily blends into compassion and perhaps an impulse to improve the situation of the observed individual. Thus the credibility of the self-contained mind is unaffected.

It is a mistake to suppose that ideas about human nature might have evolved differently except for Titchner's interference. Edmund Husserl adopted Lipps' notion of *Einfühlung* for his phenomenology. From the beginning of life, he wrote, human subjectivity comprises *inter-subjectivity*: a relation between self and other in which the other is apprehended by means of a primitive holistic process of "pairing" occurring at the level of the body. But Husserl retains the "primordial ego" as the foundation for this process: he writes about inter-subjectivity without inter-penetration (Moyn 2005: 58-62). Freud mentions Lipps and *Einfühlung* in *Jokes and their Relation to the Unconscious* (1905). By equating *Einfühlung* to the observer's *cognitive* identification with the other's perceptions and intentions, Freud similarly tailors it for a Cartesian ego (Pigman 1995: 244-252).

To summarize: nineteenth-century and early twentieth-century investigations of suggestibility, hypnosis, *Einfühlung*, and empathy did not undermine confidence in Human Nature 1.0 or its representative, the autonomous, self-contained individual. The more serious challenge dates to the 1980s, when it becomes possible, for the first time, to see the mind at work inside the brain.

EMPATHY AND MIRROR NEURONS

Interest in empathy and embodiment has revived as a consequence, in part, of the discovery of the so-called “mirror neurons.” The initial mirror neuron research was conducted on rhesus monkeys and utilized an invasive technology permitting scientists to detect and trace the activation of single neurons in the brain’s motor cortex. Subsequent research on humans employed non-invasive technologies – most often fMRI – that image the activation of populations of neurons rather than individual cells. In these experiments, the subject observes goal directed behavior being performed by someone else. The sensory input activates a “neural matching system” in the observer’s motor cortex. His activation pattern mirrors the pattern in the performer’s brain, and it matches the pattern in his own brain whenever he performs this action. Subjects were asked to passively read action words such as “lick,” “pick,” and “kick,” and fMRI showed mirroring in cortical regions that are activated when tongues, fingers, and feet produce these actions. Similar effects were produced when subjects were asked to imagine themselves or other people performing designated behavior, including expressed emotion. Thus “mirror neurons can be thought of as a sensory-motor gateway for forming *an internal representation of the observed person’s state and intents* based on their body language, facial expressions, actions, and so on” (Dinstein 2008: R957, my italics).

Mirror neurons operate in tandem with brain regions and networks responsible for (1) selecting the movements that will be mirrored on a given occasion and (2) inhibiting the performance of the mirrored movements. These two operations are invisible in most laboratory experiments, since they are designed to focus the subject’s attention on a single, unambiguous behavior. But life outside the laboratory is more complicated. Multiple actors and actions may simultaneously enter the observer’s sensory field. Elements in the field may stimulate imagined events and recall episodic memories each of which can, in turn, become a target for mirroring. Further, many actions remain ambiguous until cognitive processing puts them into context and, only then, makes it possible to infer a goal.

The human neural matching system supports four phenomenological states:

(1) The observer experiences mirror neuron activation passively in a state called “resonance.”

(2) Neural activation engenders a spontaneous and involuntary re-enactment of observed behavior and emotions. This state includes emotional contagion, contagious yawning, and the so-called “chameleon effect.”

(3) The observer uncouples his mirrored neural representation and projects it onto its source, i.e. as a cognitive, conative, or emotional state of the individual being observed. The ability to objectify uncoupled representations is called “perspective-taking.”

(4) The uncoupled representation is objectified (made explicit) and is accessible to the observer as a resource for “true imitation.”

The states are likewise evolutionary and developmental stages. The ability to uncouple mirrored representations (stages 3 and 4) requires the development of structures and networks outside the mirror neuron system. Non-human primates and other mammals get to the second stage, but no further. Normal children are capable of perspective taking and true imitation by the age of four. Perspective-taking is a precondition for “mind-reading.” This seems to be a distinctively human capacity that enables us to interpret other people’s intentions, predict their behavior, and attempt to manipulate them. (While other mammals lack this ability, there is compelling empirical evidence that some bird species – notably corvids – are adept mind-readers and agents of deception.)

Perspective-taking is the basis for self-conscious empathy. For many writers, mirroring is an intrinsically empathic event, and this view helps to explain the recent explosion of interest in empathy in cognitive and social neuroscience, neuropsychiatry, developmental and evolutionary psychology, anthropology, moral philosophy, evolutionary biology, neuro-economics, neuro-ethics, neuro-

aesthetics, and popular science journalism. Here is an excerpt from an article by Daniel Goleman, writing in 2006 in the *New York Times*:

> The fledgling field of social neuroscience is [now] figuring out the brain mechanics [of] the circuitry that underlies the urge to help others in distress. … Mirror neurons operate like a neural WiFi, activating in our own brains the same areas for emotions, movements and intentions as those of the person we are with. This allows us to feel the other person's distress or pain as our own [and we are] moved to help relieve it. Those who feel another's distress most strongly are most likely to help; those less moved can more easily ignore someone else's distress.

Goleman's excerpt reports the consensus view in social neuroscience. It is consistent with Lipps' original notion (*Einfühlung*): the observer can be said to embody the target of his gaze (Carr et al. 2003; Fogassi 2005; Heim and Singer 2008). But the phenomenon goes beyond Lipps' vision. The target's sensory-motor representations have penetrated the observer's brain: the correspondence between brains is identity and not analogy. There is another significant difference with the past. Titchner and later social psychologists made a distinction between empathy and sympathy (compassion). But Goleman presumes that empathy is not just pro-social**,** it is also morally positive (disposing people to benevolence). This was also the majority view in social neuroscience at the time (2006).

THE SOCIAL BRAIN

The term "social brain" recurs throughout the cognitive and social neuroscience literature. The brain is doubly social: it enables and inclines humans to engage in complex forms of social interaction, and it is the product of our ancestors' five million year adaptation to social life. The two meanings of social are bridged by the brain's capacity for empathy and mind-reading and the biological hardware (notably the mirror neuron system) that serves these functions. The social brain also comprises three evolutionary narratives:

The narrative of the Jacksonian brain

The narrative of other minds

The narrative of the one and the many

The narratives, whose beginnings date back to the seventeenth century, are explorations of the brain's biological and sociological origins, its architecture, its interface with the mind, and the ways in which researchers might penetrate its recesses. They are neither "mere stories" nor the "historical background" to the real business of neuroscience. Because they are an integral to the business, I will want to describe them one by one, with an occasional detour.

1. THE NARRATIVE OF THE JACKSONIAN BRAIN

In the Croonian Lectures on the Evolution and Dissolution of the Nervous System (1884), the neurologist John Hughlings Jackson described the nervous system as comprising a hierarchy of sensory-motor "centers" acquired incrementally as evolutionary adaptations. At the bottom of the hierarchy are the oldest centers – spontaneous, inflexible, reflex-like. The older centers are inhibited and controlled by centers acquired later. When a control center is disabled (by disease, alcohol, etc.), previously inhibited centers are released to perform their evolved functions, and the effect is expressed in symptoms, syndromes, and mental states. These released functions are called "positive" symptoms; a "negative" symptom, such as paralysis, results from the loss of a function. This process, which retraces the nervous system's evolutionary path in reverse order, is called "dissolution." A patient with delirium tremens who sees non-existent rats and mice is exhibiting a positive symptom consequent to shallow dissolution, leaving several evolutionary layers unaffected. On the other hand, a case of epileptic mania, characterized the explosive discharge of energy and the so-called "dreamy state" that follows grand mal seizures are products of deep dissolution reaching lower evolutionary layers.

Thus the selection of appropriate neuropsychiatric disorders and positive symptoms allows researchers to explore the brain's evolutionary architecture.

Hughlings Jackson's clinical interest focused on epilepsy and aphasia, and his most extended observations concern these disorders. Following his death in 1911, interest in the Jacksonian brain declined, the exceptions being W.H.R. Rivers in Britain, Paul McLean in the United States (his "triune brain" reiterates the Jacksonian scheme), Henri Ey in France, and arguably Sigmund Freud in *The Interpretation of Dreams*. Interest in the evolutionary meaning of mental disorders reemerged in the 1960s (Price 1967), stimulated by developments in sociobiology and (later) evolutionary psychology. These writers were generally more interested in the architecture of the mind rather than the brain, and their work spanned many conditions, including depression, postpartum depression, antisocial personality disorder, generalized anxiety, schizophrenia, agoraphobia, and animal phobias. In these accounts, each disorder reveals its distinctive evolutionary origin. There is no grand narrative: the mind comes together as a mosaic of evolutionary events and dispositions. The Jacksonian brain is different in this regard. It reemerges (anonymously) in the 1990s, concurrent with the availability of functional neuroimaging technology, the consequent discovery of the human mirror neuron system, and the wide-spread conviction that empathy and mind-reading are core features of human nature and its evolutionary history. To investigate empathy and mind-reading, however, one requires an appropriate assortment of normal and abnormal brains. Three disorders are especially suited to the job: schizophrenia, autism spectrum disorders, and psychopathy.

In one respect, the social brain and Jacksonian brain are quite different. Hughlings Jackson believed that every mental state has a correlative nervous state: the highest link of the purely physical chain of sensory-motor structures. The two states occur in parallel: philosophers of mind call this "property dualism." He explicitly rejected Descartes' doctrine of dual substances and likewise "materialists" who claimed that every mental state can be reduced to a discrete neural state. Hughlings Jackson called his position *the doctrine of concomitance*. The term is rarely used today, but the problematic – the brain-mind nexus –

continues to attract the attention of philosophers, including John Searle, Jerry Fodor, and Daniel Dennett.

Into the 1990s, reductionists lacked an effective technology and research program to bridge mind and brain. This makes the social brain special: it provides a bridge is based on three kinds of empathy, namely motor empathy, emotional empathy, and cognitive empathy. Mirror neurons are a subpopulation of motor neurons that extend to brain regions associated with emotional and cognitive empathy. Thus social brain research has the possibility of delineating a "purely physical chain of sensory-motor structures" extending to the conscious mind, leaping over the doctrine of concomitance. Further evidence is provided by continuing experiments on which participants' brains are imaged while they complete carefully designed cognitive tasks or, alternatively, while they observe emotionally evocative stimuli.

2. THE NARRATIVE OF OTHER MINDS

The size of the human brain is an evolutionary puzzle. Our ancestors split from the great apes six million years ago. During this period, the ancestral human brain quadrupled in volume. The metabolic costs of the human brain are enormous: it constitutes 2% of total body weight and consumes 15% of cardiac output and 20% of body oxygen. These demands are ceaseless and inflexible. A brief shortfall results in neuronal death, resulting in a debilitating and permanent loss in functioning. It can be assumed that the evolutionary growth of the brain reflects an adaptive advantage: the benefits were consistently greater than the metabolic costs. During the initial stage, benefits were caloric and a product of improved adaptation between the organism and the physical environment. Efforts to model the evolution of hominid brains, indicate that increasing costs would eventually exceed environmental benefits. How did the expanding brain pay for itself?

The early history of the hominid brain is about adaptation between organism and physical environment. The subsequent history is about brains adapting to other brains. The process is described as a *cognitive arms race* (Byrne and White 1988; Barton and Dunbar 1997; Dunbar 2003). It began with the emergence of a unique hominid mind-reading capacity: the ability to detect the intentions and predict the behavior of other members [1]of one's group. The next stage was the emergence of so-called "cheaters," who used mind-reading to manipulate other members. Cheaters would have had an adaptive advantage and therefore multiplied. In time the proportion of cheaters would increase to the point that social life would become unpredictable and regress to the previous, more primitive stage. This did not happen because the brain evolved a "cheater detector" capacity. But this could be only a transient solution, since a new generation of opportunistic individuals would exploit this capacity to cheat a new generation of victims. Once again cheaters thrive, social life grows unpredictable, etc. Devolution is avoided with the emergence of cheater-detector 2.0. And so on, over millions of years, until arriving at the current version of the human brain.

The cognitive arms race is depends on the ability of individuals to detect the intentions of others and predict their behavior – in other words, "mind-reading." The responsible mechanism is the human mirror neuron system, which has its own evolutionary history (Gallese 2000, 2001; Gallese and Goldman 1998; Fogassi et al. 2002 and 2005; Iacoboni et al. 2005; Kohler et al. 2002; Rizzolatti and Arbib 1998; Rizzolatti and Craighero 2004; Tettemonte et al. 2005; cf. Singer 2006; Jacob 2008; Jacob and Jeannerod 2005; see Fadiga et al. 1995 for the discovery of mirror neurons):

> *Stage one*: The observer's mirror neurons *resonate* with the neurons of the agent performing a goal-directed action. A transient "primary representation" of the neural activation pattern is produced in the observer's brain. The brains of non-human primates did not evolve beyond this stage. Emotional contagion is possible, but not emotional empathy.

> *Stage two*: The primary representation can be *uncoupled* from the transient experience and *copied* inside the brain. This is the neural basis for perspective-taking. Cognitive and emotional empathy are now possible.
> *Stage three*: Copies are archived and provide the brain and mind with a library of action patterns. True imitation becomes possible.[2]

The phylogenetic series is replicated in the cognitive development of normal children.

THE PROBLEM OF THE ONE AND THE MANY

Human Nature 1.0 poses an evolutionary puzzle: How did aggregates of autonomous, self-interested individuals – our remote ancestors – coalesce into stable, self-reproducing societies? And once formed, how did the earliest groups evolve into complex social formations?

Thomas Hobbes' thesis was that our ancestors were guided by reason and driven by fear to surrender their private right to use force to a sovereign power that would excercise their strength in the interest of collective peace and defense (Sahlins 2008: 13). Freud's solution in *Totem and Taboo* (1913) is a two-tier hierarchy maintained by the violence and authority of consummately selfish and insatiable patriarch. A parallel solution has been observed among baboons: the hierarchy is stable, the alpha male is similarly violent and insatiable, but the position of individuals within the hierarchy is fluid. John Price, a founding father of evolutionary psychiatry, believes that their situation is very close to the condition of the earliest humans. He sees the legacy of this Paleolithic adaptation in the epidemiology and symptomatology of major depression (Price 1967). Adam Smith offered a third solution. In *The Theory of Moral Sentiments* (1759), he writes that man is doubtlessly selfish, but his self-love is tempered by an imaginative capacity to place himself in the situation of others and by his innate concern for their happiness and misery. This explains the naturalness of pity and

compassion. In *The Wealth of Nations* (1776), he responds to the further question of how the earliest groups might have evolve into more complex formations. It is through a human propensity to exchange one thing for another: goods, gifts, and assistance.

The solution given in the evolutionary narrative of the social brain comes close to Adam Smith's account. It emphasizes similar propensities: empathic mind reading and exchange. As you will see, it has problems staying on course.

3. THE NARRATIVE OF THE ONE AND THE MANY

This narrative begins with the riddle of altruism. Population biologists define altruism as behavior in which individuals sacrifice or reduce their own reproductive chances in favor of other members of their group. If this behavior is genetically determined, then altruistic individuals should eventually disappear. This does not occur. The riddle is solved by kin selection theory, which says that altruism is adaptive if the frame of reference is the survival and reproduction of genes rather than individuals. If so, then altruism is limited to the altruist's relatives, who share some of his genes.

The great leap forward in social evolution is the emergence of reciprocity, a behavior that incorporates non-kin in networks of mutually advantageous exchanges. Like mind-reading, social life evolved dialectically (Bernhard et al. 2006; Boyd et al. 2003; Nowak and Sigmund 2005; Rosas 2008; Simpson and Beckes 2006). Reciprocity creates the possibility of "free-riders." These individuals take but do not reciprocate; they enjoy benefits without costs. The situation recalls the story about deceivers. Non-reciprocators have a reproductive advantage (they get calories without expending energy) and eventually replace reciprocators. Social life regresses. This did not happen because of another evolutionary development: the emergence of punishment in the form retribution or ostracism. Non-reciprocation becomes expensive. Punishment is also expensive for enforcers, who may become targets for retaliation and the

disaffection of his own kin and neighbors. Since enforcers jeopardize their own reproductive success, punishment is properly called “altruistic punishment.”

Punishment solves a riddle but is also the source of a riddle. Why would a rational individual – someone innately self-interested and capable of calculating cost-benefits – become an enforcer? The enforcer’s material benefits are hypothetical. His potential payoff may be in the distant future, and the future costs of his actions are unpredictable. Even if he eventually gets his fair share, he cannot know whether this would have happened without his intervention. Therefore the enforcer’s expectation of material rewards can provide only a weak motive for practicing altruistic punishment.

Neuroeconomics – a hybrid of experimental economics and social neuroscience – opened the way to a solution with a landmark experiment, “The neural basis of altruistic punishment,” published in the journal *Science* (de Qervain et al. 2004; also Fair and Camerer 2007; Fliessbach et al. 2007; Knoch et al. 2006; Lanzetta and Englis 1989; Singer et al. 2006). The experiment was organized around “the dictator game.” One participant is given a sum and told to divide it among other players as he wishes. In subsequent rounds, similar sums are given to the other players. Some players violate cultural standards of fairness and keep an excessive portion for themselves. Participants can punish these so-called “defectors” by withholding payment when the opportunity arises. However the enforcer must reduce the amount that he pays himself. Thus his behavior is altruistic and pro-social: it contributes to the stability of the network.

Neuroimaging technology (positron emission tomography) was used to observe the enforcers’ brains in action. Images showed activation of the caudate nucleus of the dorsal striatum, a “reward center” (pleasure) associated with dopamine excretion. Activation was correlated with the enforcer’s *anticipation* of punishing the defector; intensity of activation correlated positively with severity of the punishment. In other words, the enforcer’s brain empathically mirrors the

imagined (anticipated) distress of the target and, at the same time, delivers pleasure. (The capacity of the brain to mirror imagined distress has been demonstrated in participants who asked to imagine someone else in physical pain (Jackson et al. 2006; see also Singer et al. 2006; Lamm et al. 2007). Parallels with Bernheim's speculations on autosuggestion should be obvious.)

SCHADENFREUDE

The part played by the imagination in the operation of empathic cruelty can be seen directly in a recent study by Takahashi et al. (2009). The study concerns the emotions of envy and *Schadenfreude*, conceived as two sides of one coin. Envy is described as a painful emotion, characterized by feelings of inferiority and resentment, and produced by the individual's awareness of another person's superior quality, achievement, or possessions. *Schadenfreude* is characterized as a pleasurable emotion, produced by awareness that a misfortune has fallen to a person who is envied or otherwise resented.

The Takahashi group recruited nineteen male and female students for their research. Prior to fMRI scans, the participants were asked to read descriptions of three fictive students. (Participants and fictive students were matched for gender.) The first student (A) is the "protagonist": participants are expected to view students B and C from A's perspective. The protagonist is depicted as someone with only average abilities, social endowments, personal achievements, possessions, and prospects. Student B is depicted as someone who is superior and successful in these respects and in the life domains that are important to the protagonist (and participant). Student C is depicted as superior and successful but in domains that are not important to the protagonist.

During fMRI scans, participants silently read scripts pertaining to A, B, and C. The phase one scripts described the successes and advantages enjoyed by B and C. Participants rated the sentences according to how envious the events made them feel (1 = no envy, 6 = extreme envy). Phase two scripts described

various misfortunes that spoiled events and prospects for the fictive students. Participants were asked to report the intensity of their pleasure (*Schadenfreude*) regarding each outcome. Thus they provided two responses: subjective appraisals of their emotions, and images of neural activation.

An earlier neuroimaging study (Eisenberger et al. 2003) shoed that physical pain and "social pain" (in the experiment, self-reported distress caused by social exclusion) are associated with the same region of the brain, the anterior cingulate cortex The Takahashi et al. research shows that intense envy (focused on student B) produces a similar activation. On the other side of the coin, intense *Schadenfreude* (likewise focused on student B) is associated with activation of the ventral striatum, described "a central node of reward processing." Thus the *Schadenfreude* effect imaged in this research replicates the events inside the enforcer's brain in the de Quervain et al. study.

EMPATHIC CRUELTY AND HUMAN NATURE

Altruistic punishment persisted throughout the long period following the emergence of social networks based on reciprocity. And it can be assumed that motivation for altruistic punishment was transmitted across generations as a heritable disposition. The rise of state societies, markets, and institutions for regulating exchange reduced the importance of reciprocity and the role of altruistic punishment. But these developments were too recent to affect the disposition to punish, and it can be considered an aspect human nature. In T*he Concise Oxford Dictionary*, "cruelty" is defined as "having pleasure in another's suffering." If so, the disposition can be called *empathic cruelty*.

Recall Daniel Goleman's account of mirror neurons, where he represents empathy as *intrinsically pro-social and morally positive*. This view pervades social neuroscience. "Empathy allows us to understand the intentions others, predict their behaviour, and experience an emotion triggered by their emotion. In short empathy allows us to interact effectively in the social world. It is also the

"glue" of the social world, drawing us to help others and stopping us from hurting others" (Lawson et al. 2004: 163; Baron-Cohen et al. 2005; Wheelright et al. 2006; also Williams et al. 2001 and Iacoboni and Dapretto 2006).

Simon Baron-Cohen, an authority on autism spectrum disorders, writes that human evolution has produced polar types of brains: a female brain with highly developed empathic capacities, and a male brain adapted to manipulating objects and creating systems. Empathy originated as a pro-social adaptation allowing Paleolithic females to detect the wants of pre-verbal children and the moods of the potentially dangerous males with whom they lived. On the other hand, autistic individuals are characteristically poor empathizers. The epidemiology of the disorder is biased towards males: the ratio is 5 to 1, and 10 to 1 with high functioning autistic disorder. We should think of autism as a disorder of the extreme male brain.

According to Baron-Cohen, people respond to suffering in these three ways:

1. The observer's response *mirrors* the sufferer's distress.
2. The observer's response is culturally appropriate but does not mirror the suffering: e.g. the observer responds with sadness to the sufferer's pain.
3. The observer takes pleasure in the sufferer's condition.

Baron-Cohen equates "empathy" – the glue of the social world – with the first two responses. He explicitly excludes the third. He does not consider a fourth possibility, where the observer mirrors the sufferer's distress while taking pleasure in the sufferer's condition. Why? Is "empathic cruelty" a contradiction in terms? De Quervain's research suggests otherwise.

EMPATHIC PSYCHOPATHS

> "Psychopathy can be considered one of the prototypical disorders associated with empathic dysfunction. Reference to empathic dysfunction

> is part of the diagnosistic criteria of psychopathy. The very ability to inflict serious harm to others repeatedly can be, and is, an indicator of a profound disturbance in an appropriate "empathic" response to the suffering of another." (Blair 2005: 707-8)

Recent research by Jean Decety and his collaborators (n.d.) utilized eight adolescents diagnosed with "aggressive conduct disorder" (CD) and eight matched controls. The classification "conduct disorder" is limited to young people, generally males. Aggressive CD people have a record of inflicting pain on others. Participants' brains were scanned with an fMRI apparatus while they watched videos of people experiencing pain resulting from an accident or someone else's intentional action. Brain images showed that the pain matrix in the CD brains is activated to a significantly greater extent than in the normal brains. They also showed greater activation in the striatum – "part of the system implicated in reward and pleasure." Regions associated with the *regulation* of emotion were activated to a lesser extent than in the normal brains. And it is assumed that similar activation patterns occur when CD adolescents actually inflict pain on others.

The brain images show that "highly aggressive antisocial youth enjoy seeing their victims in pain and … may not effectively regulate positively reinforced aggressive behavior" – i.e. behavior providing them with "enjoyment" or "excitement." CD brains and normal brains share an innate capacity for empathic cruelty. The difference between them is that CD brains are *more empathic* than normal brains, but also less capable of regulating the consequent emotion. (This is the favored hypothesis. An alternative hypothesis is that CD youths have a lower threshold for responding to situations of negative affect, including viewing pain in others, and are less able to regulate negative emotion. Distress induces renewed aggression, aggression inflicts more pain, the empathic experience of the pain heightens distress in the CD brain, and so on.)

In the same year, a research team (Fecteau et al. 2008) investigated empathy and psychopathic tendencies in a non-psychiatric population Male college students were asked to watch four videos: a human hand at rest; a Q-tip touching the hand at point X (over the first dorsal interosseus muscle); a needle inserted at point X, and a needle penetrating an apple. During viewing, motor cortex excitation was monitored by transcranial magnetic stimulation (TMS). This technology is able to localize and measure neural responses to pain within the sensorimotor system: muscles at point X mapped onto corresponding regions of the brain. Responses to the static hand video provided a base line. The Q-tip and needle videos elicited reduced motor cortex excitation; the effect was greatest in response to the needle video. The response is characterized as "empathic" (see also Singer and Frith 2005). Participants were also asked to complete a questionnaire, the Psychopathic Personality Inventory (PPI). High scores on "coldheartedness" (callousness, guiltlessness, and lack of sentimentality) correlated with a greater reduction in cortical excitation.

Fecteau et al. cite research by Avenanti et al. (2005). The Avenanti team followed a similar procedure except that participants were asked to complete a questionnaire measuring "empathic concern" and personal distress. The results are that "massive inhibition of corticospinal excitability affecting upper limb muscles" correlate with high empathy scores: greater reduction equals greater empathy. In other words, while everyone responds empathically to the needle video, the empathic response is more intense in participants with psychopathic tendencies. Thus Fecteau's team and Decety's team reach a similar conclusion. (n.b. This is the explanation for *reduced* neural excitation on these occasions: The response may be part of an evolutionary adaptation that helps the observer's corticospinal system "implement escape or freezing reactions" (Avenanti et al. 2005: 958).)

In common with Baron-Cohen, the Fecteau team seems reluctant to get to the bottom of the empathic cruelty business. The team visualizes empathy inside the

psychopath's brain, and then asks how one should understand this finding given that "the psychopathic construct … is usually defined by a lack of empathy." Their solution is to conceive empathy as a two-step process. Step one produces an embodied (mirrored) simulation at a sensory level, facilitates mind-reading, and provides the psychopath with a "substantial advantage for manipulation or harm." According to DSM-IV, while "deceit and manipulation are general features" of the condition, these individuals "frequently lack empathy" – that is to say, emotional empathy and a benevolent attitude (American Psychiatric Association 1994: 645, 657). According to the Fecteau team, these features, characteristic of true empathy, are produced during step two, when the simulation information needed for mind-reading is made available for an emotional/affective response (pity, sorrow, remorse, outrage, etc.). Thus the exaggerated empathic response that fMRI unexpectedly visualized in the "coldhearted" and participants is explained as the consequence of a defect in step-two processing that "might be maladaptive in psychopaths" (Fecteau et al. 2008: 142).

ON THE GENEALOGY OF MORALITY

Friedrich Nietzsche was less timorous about including empathic cruelty in human nature. Take a close look at an episode involving cruel punishment, something analogous to the de Quervais experiment, where there is an identifiable perpetrator (enforcer) and victim (non-reciprocator). What are the perpetrator's motives? The obvious answer is that he is gratified by his victim's suffering. But why would the perpetrator's cruelty be gratifying? Well perhaps he believes that his action is pay-back. The victim had previously injured him or deprived him of something to which he is entitled. ("Free-riders" would be perfect candidates for cruelty. But Nietzsche is not thinking in these terms, is unfamiliar with the reciprocity narrative, and cannot imagine "altruistic punishment.") If so, does suffering somehow repay the victim's debt to the perpetrator and reduce his guilt? This "economic" explanation appeals to some moral philosophers, but it makes no sense to Nietzsche. Suffering is not like money. It is not convertible and it cannot be transferred like coins, from one hand to another. The reality,

according to Nietzsche, is that the perpetrator is *not* gratified because he sees his victim suffer. He is gratified because the victim's suffering tells him something about himself. It affirms that he, the perpetrator, has *power sufficient to inflict the suffering*. It is the perpetrator's thirst for this knowledge about himself and his world that explains the bond between empathy and cruelty. *It is the perpetrator's ability to empathically experience his victim's suffering, not his ability to exact the suffering from the particular victim, that delivers to him visceral proof of his power* (Nietzsche 1994/1887: 39-43).

In *Crowds and Power* (1962), Elias Canetti deploys Nietzsche's theme to explain Daniel Paul Schreber's paranoid fantasies (*Memoirs of My Nervous Illness*, 1903) and likewise the real enormities perpetrated by Hitler and Stalin. (I will return to Canetti in chapter four.) This theme – connecting empathic cruelty to power and crowds – is also part of Daniel Lord Smail's recent book, *On Deep History and the Brain* (2008) (see also Nell 2006 and Stein 2000). Smail sketches an evolutionary history that begins with our pre-hominid ancestors living in groups resembling chimpanzee and baboon societies. The pre-hominid social order was hierarchical and dominance was maintained by random acts of violence against subordinates. Early hominid society was the next stage. Smail imagines these ancestors living social lives similar to contemporary foragers and hunters. Contra to the situation Freud describes in *Totem and Taboo*, it was relatively egalitarian and presumably less stressful way of life. This lasted until the Neolithic Period. Social hierarchies returned and soon afterward the earliest states emerged.

From the Bronze Age until the early modern times, ruling classes maintained dominance by controlling the bodies and regulating the neurochemistry of the brains of the subservient classes. High levels of stress were maintained among the unfortunates through the exercise of continual and often unpredictable terror and repression. Empathic cruelty provided stress relief, and the masses were periodically treated to sadistic spectacles and horrible priestly rites. But all of this

was under the control of the elites. Smail calls these practices “teletropic”: their goal (telos) or function was to preserve the power of the elites.

Conditions changed in Western Europe during the seventeenth and eighteenth-centuries. Alcohol, opiates, sugar, caffeine, tobacco, pornography and sentimental novels became generally available, and now individuals could modulate their own body chemistry. These “autotropic” mechanisms “mimic or alter the effects of dopamine, serotonin, norepinephrine, and other chemical messengers.” It is at this historical juncture, the point at which gin, chocolate, and novels replace empathic cruelty for the relief of stress, that ordinary people are empowered (so to speak) to take control of the caudate nucleus. Fast forward to the twenty-first century: the world of the modern consumer, the apotheosis of the autotropic, the time of *La foule des solitaires.* Thus empathic cruelty endures as part of human nature but is less obtrusive today than it was in pre-modern times, except for hyper-stressful events that habitually intrude into our time in the form of world wars, genocides, ethnic cleansings, economic depressions, etc.

MEMORY AND EMULATION NEURONS

> Mirror neurons offer a tangible integration of perceived and performed action and better still, they do so by means of an experimentally accessible specialized single cell type. The opportunity is hard to resist. (Kinsbourne 2005: 211)

> More than a decade of research on mirror neurons has left us with a crucial problem: is there a mirror neuron system in humans? (Turella et al. 2009: 9)

The standard account of mirror neurons begins with a monkey or human observing a goal-directed action. The observer’s brain mirrors the neuronal activation in the actor’s brain: a representation is registered in the observer’s

brain, and the observer brain uses it to infer the actor's intention (Gallese and Goldman 1998, Iacoboni et al. 2005, Rizzolatti and Craighero 2004). The researcher has a neuroimage that tokens the representation inside the observer's brain. The neural mechanisms that connect the observer's representation to his inference remain to be discovered.

There are other ways to interpret the "mirror effect." Gergely Csibra and colleagues believe that the observer's representation pre-exists the actor's performance (Csibra and Gergeliy 2006; Brass et al. 2007; also Kilner and Frith 2008). It is already there, inside his brain, part of a library of action patterns. The standard view is that mirroring is a response to *any kind* of "goal directed" behavior performed by a conspecific. Csibra cites experiments showing that the observer's brain responds only to *meaningful* goal directed behavior; that is, occasions when a reasonable expectation of reward, such as food in the case of monkeys. When the observed actions involve unfamiliar artifacts, occur in unfamiliar circumstances, or approximate nothing in the observer's repertoire, they are meaningless. They appear to be "goal directed" (purposive) but the goals are obscure, without context. On these occasions, the observer's brain responds by attempting to infer the actor's goal. The brain regions activated and imaged during this process have no mirror properties.

The situation is vastly complicated for human observers and their brains by the fact that most targets of purposive behavior can implicate countless possibilities; that is, they can be elements in multiple, alternative scripts. According to Csibra and colleagues, experiments with adults and preverbal infants provide us with persuasive evidence of an innate human disposition to teleological reasoning, also known as "rational action." An individual observes an actor's meaningful behavior: the meaning is inferred from the context and not from reading the actor's mind. The observer's brain sifts through its repertoire of action patterns, and selects the one that most efficiently serves the inferred goal. The selected

pattern (representation) is utilized to anticipate and monitor the actor's behavior. When an actor's behavior is novel but successful, the observer brain modifies the action pattern and adds it to the repertoire of patterns. In other words, the "mirror neurons" that are being imaged in similar experiments are more correctly called "emulation neurons" ("to equal or exceed"). Emulation neurons and goal-oriented rationality would play a pro-social role in human evolutionary history. One can also imagine that they would be the basis for an alternative, less exciting, version of the cognitive arms race. In other words, they would have brought us to where we are today. What one cannot reasonably imagine is that emulation neurons and goal-oriented rationality would provide a platform for the emergence of intersubjectivity – brains penetrating other brains – or empathic cruelty, or passage to Human Nature 2.0.

Ilan Dinstein and his collaborators have questioned the existence, or at least the pervasiveness, of human mirror neuron system from another perspective. Mirror neurons are presumed to respond during the execution of a specific movement and also when the individual observes this movement. "[C]ross-modal adaptation is the critical signature of mirror neurons since visual adaptation may also be generated by movement-selective visual neurons … and motor adaptation may be generated by movement-selective motor neurons." The fMRI technique measures the *average* neural response across a large neural population located within each voxel (a volumetric sector within a neuroimage), and it is difficult to separate the relative contribution of the different neural subpopulations within a given voxel (Dinstein 2008: R957). There is an alternative way to explain the attributed "mirror" effect within a voxel that is equally consistent with the averaged response. "Such a response could be generated by separate visual and motor neural populations co-existing in the same voxels. Even more importantly, such responses could be generated by neural populations that are not movement selective at all," but are associated with a variety of motor behaviors (Dinstein 2008: R958). A recent experiment, designed specifically to detect a mirror effect from among averaged effects, found no evidence of the

presumed cross-modal adaptation (i.e. selective visuomotor neurons) anywhere in the brain (Dinstein et al. 2008).

Csibra's thesis and Dinstein's conclusion are controversial and, for the moment at least, have been swept to the margins of attention by the momentum of the human mirror neuron discourse.

THE FOLLOWING CHAPTERS

Chapter Two – A Ghostly Robinson Crusoe

Does the emergence of the social brain represent a revolutionary moment in the history of human nature? Let us return to Gilbert Ryle's claim that, in the cultural imaginary, the human mind is perceived as a self-contained place in which "each of us lives the life of a ghostly Robinson Crusoe." Daniel Dennett, once Ryle's student, described the place as a "Cartesian theatre" in which a fictive inner-self watches representations of the events and objects impinging on a bodily outer-self. The inner-self and outer-self are near-duplicates, and the cultural ideal is an inner-self freed from the artifice of the self-representations needed for navigating the social world. The ideal inner-self is not merely self-aware but also self-transparent: free from self-deception, false consciousness, and pathological distortion.

Self-awareness is the tip of the pyramid of consciousness in this account. There are important higher-level cognitive operations can take place outside self-awareness yet within consciousness. These operations include a solution to the "frame problem": The mind (and brain) manage a global knowledge-base encompassing episodic memory, semantic memory, and implicit memory traces. But how does the mind select, from this colossal base and nearly limitless possible associations, elements and associations that are salient on a given occasion and that make perceived objects and events (including behavior) meaningful? And how does mind perform what seems to be its default mode of

inference, a holistic and rule-less procedure called “abduction” (inference to the best explanation)? Here are two solutions to the problem:

> *Human Nature 1.0 solution*. The inner-self is assisted by its inner-self, an unreflective cognitive operator (homunculus) inaccessible to self-awareness.

> *Human Nature 2.0 solution*. The so-called higher-level cognitive operations are performed computationally by inter-connected, self-adjusting physical systems. There is no need to posit a mind or homunculus. Neuroscientists may attribute psychological (mental) predicates to the brain, but the terms are being used metaphorically (e.g. Blakemore 1990: 265-267).

The social brain’s basic *mental* property is its capacity to produce and respond to “representations” of perceived objects and behavior. The representations enable observers to interpret actors’ intentions and provide the foundation for empathy and mind-reading. But representation is necessarily both a *representation of* something and a *representation for* something, in the sense that a map presumes a map-reader. Who is the map-reader inside the social brain? The experimental situation in mirror neuron researcher is designed to de-contextualize objects and behaviour, fostering the illusion that the resulting perceptions-representations are produced without interpretation or homunculus and that interpretation is a deliberative process. Once this is understood, it becomes possible to see that mirroring and neural representations are not evidence of movement from culture (Human Nature 1.0) to science (Human Nature 2.0), but rather movement between different versions of culture/mind.

Chapter Three – Traumatic Empathy

Baron-Cohen argued that empathy is the glue that holds society together. What is more certain is that empathy is the thing that holds the social brain together. It

is the basis for mind-reading and, *ipso facto,* the brain's dialectical history. Empathy is not an off-the-shelf concept. It has a history and context: one should think of empathy and the social brain as co-evolving phenomena. Thus there are epistemic things that have only recently emerged – mirror neurons, empathic cruelty – but have something familiar about them, seem already experienced, and, because of this, are self-confirming.

The empathic brain is anticipated in a range of clinical phenomena, in which people unconsciously replicate (enact) behavior that they are observing or imagining: mental contagion, mass hysteria, conversion hysteria, autosuggestion, hypnotic suggestion, transference neurosis, projective identification, chameleon effect, and repetition compulsion (traumatic neurosis). We can make a second list that includes varieties of dissimulation – counterfeits, frauds, mimics – in which a performer intentionally copies or internalizes the mannerisms of some person or type that will be recognizable to his audience. These phenomena are familiar today in symptomatic states associated with posttraumatic stress disorder – forms of empathy-contagion ("vicarious PTSD" affecting psychotherapists, "second-generation PTSD" affecting offspring of Holocaust survivors), autosuggestion ("factitious traumatic memory"), dissimulation ("fictitious traumatic memory"), and repetition ("flashbacks" and other kinds of "re-experiencing").

Starting in the 1980s, with the adoption of DSM-III and the recognition of PTSD as a bone fide diagnostic classification, the Anglophone cultural imaginary has absorbed reservoir of traumatic images and motifs, delivered in popular novels, films, memoirs, journalistic accounts, confessional television, empirical research by epidemiologists and social scientists, and renditions by historians and "trauma theory" experts in the humanities. A traumatic sensibility emerged; it penetrates even casual conversation; and popular consciousness is eventually prepared for the possibility of neuronal empathy. It is all quite natural, except that the medium

for these developments, traumatic memory, is something rather less natural than it seems.

Every clinical disorder is historical in an obvious sense. The ways in which disorders are perceived and experienced change over time. They are affected by changing etiologies, diagnostic classifications and technologies, treatment modalities, cultural conventions, social values, institutional resources and priorities, and so on. Traumatic memory and posttraumatic disorders are historical in an additional sense. The ways in which memory and syndrome are described and experienced change abruptly in response to *external* historical events – most often, moments of historical violence. In chapter three, I want to argue that the history of traumatic memory and posttraumatic disorders is not continuous but rather episodic. In conventional accounts the history appears to be linear and progressive, but it is because the accounts are anachronistic. Readers are encouraged to see and judge the past through the lens of a historically particularistic configuration, namely PTSD. It is in this sense and context that one might justifiably argue that trauma (PTSD) mirrors the past.

TO BE COMPLETED:

Chapters Four – Empathic Perpetrators and Witnesses

This chapter will focus on the theme of the self-traumatized perpetrator (post-Vietnam War PTSD) and the self-traumatized witness (Holocaust trauma).

Chapters Five – Virtual Bodies and the War on Terror

This chapter will focus on efforts to overcome the contradictions of traumatic memory (detailed in chapter three) through the creation of virtual bodies and the displacement of the clinical gaze from trauma to resilience.

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[2] Some researchers cite evidence that monkeys are capable of imitation. See Visalberghi and Fragaszy 2002 for a review of this research and their reason for rejecting this evidence: true imitation is a form of social learning, monkeys are capble of social learning, but not imitation. According to the authors, evidence for (limited) imitation by apes is more convincing.