

PERSON AND BRAIN: A HISTORICAL PERSPECTIVE FROM WITHIN THE CHRISTIAN TRADITION

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'Person P is identical with person P* if and only if P and P* have one and the same functional brain'. This formula, from Stéphane Ferret's *Le philosophe et son scalpel. Le problème de l'identité personnelle* (1993), enunciates a theory about the conditions of personhood and personal identity: To have the same brain is to be the same person; conversely, the brain is the only part of the body that we need, and that has to be ours, in order for each of us to be ourselves. The human being depicted here is a 'cerebral subject' characterized by the property of 'brainhood', i.e. the property or quality of *being*, rather than simply *having*, a brain. Ferret coined his formula while discussing philosophical views about personal identity. Such views, however, are intimately connected with scientific developments and social realities. Far from being a theoretical entity, the cerebral subject is a major anthropological figure of contemporary society and culture.

The first part of this paper outlines a history of the cerebral subject. Historians, philosophers, anthropologists and sociologists have carried out important studies on related topics. Nevertheless, a notion seems to be missing that might bring to the fore what is common to these various fields as regards views about man. 'Brainhood' and 'cerebral subject' may fulfill that function. The second part of this paper uses the history of Christianity as a resource for thinking the relation of person and brain. It explores how the history of the Christian tradition, and especially that of the doctrine of the resurrection of the body, can illuminate contexts and ways of 'knowing human nature' through issues concerning the definition and practices of personal identity.

In a 1979 article entitled 'The Body as Understood in Contemporary Thought and Biblical Categories', Father Antoine Vergote, a psychoanalyst, theologian and professor emeritus of the University of Louvain, wrote that for Christianity a person 'is not someone who has a body but whose exis-

tence is corporeal'; in other words, 'the body is the whole man'. The doctrine of the resurrection of the flesh highlights that while man is not reducible to the body, there is no such a thing as a disembodied person. But the doctrine itself was an object of debates, the focus of which can be epitomized in the question, What is the part of body that we need in order to be ourselves? The anthropology of brainhood gives a straightforward answer: If the brain of A were transplanted into the body of B, then the new entity would be A with the body of B. I am where my brain is. 'This simple fact', commented leading neuroscientist Michael Gazzaniga in *The Ethical Brain* (2005), 'makes it clear that you are your brain'.

Yet the fact is simple, and the ontological inference legitimate, only if one has accepted the anthropology of brainhood – an anthropology that Christian thought problematizes radically. My proposal, in short, is that the history of the debates about the resurrection of the body in the Christian tradition are one of humanity's most profound explorations of personal identity; as a centuries-long self-reflective thought-experiment, they have defined and elaborated such questions as, What is a human being? and What is the relation of self and body?

1. THE EMERGENCE OF BRAINHOOD

At the meeting *Mind, Brain, and Education* that took place at the Pontifical Academy of Sciences in November 2004, I used for the first time the term 'brainhood', and sketched the historical development of the anthropology of the cerebral subject. I argued that, rather than being a consequence of advances in knowledge of the brain, the 'cerebralization' of personhood largely resulted from seventeenth-century transformations in the philosophies of matter and personal identity.

In the second edition of his *Essay concerning human understanding* (1694), the English philosopher John Locke claimed that if my little finger is cut off my hand, and my consciousness is located in the little finger, then 'it is evident the little finger would be the person, the same person; and self then would have nothing to do with the rest of the body'. In his view, personal identity (as both temporal continuity and self-same sameness) depends on memory and consciousness; it thus becomes purely psychological, and distinct from bodily identity. In comparison with the essential corporality of the self in the Christian tradition, the Lockean approach implies an obvious loss of body.

Understandably – since the brain was known to be somehow the seat of memory and consciousness – several Enlightenment authors expressed the belief that the brain is the only organ essential to the self. The Swiss Charles Bonnet, for example, wrote in his 1776 *Essai analytique sur les facultés de l'âme* that 'If a Huron's soul could have inherited Montesquieu's brain, Montesquieu would still create'. It did not matter that the soul and body were those of a 'savage'; what counted was that the brain be the philosopher's own.

One feature makes Bonnet's early statement of the anthropology of brainhood look extremely modern: the substantial link for the constitution of personhood is between soul and *brain*, rather than soul and *body*. As Ferret, Bonnet reduced to the brain the body relevant for personal identity. Another feature, however, dates the naturalist's remark to its century and to its Christian context: the joint that makes up the human person is that between the brain and the *soul*.

The later development of the neurosciences reinforced the ontological centrality of the brain. In the nineteenth century, brain research evolved towards increasing technical, descriptive and argumentative sophistication and precision, and towards the abandonment of the concept of soul. Self no longer depended on soul, and at the same time the connection of brain to self and personhood was confirmed and refined. Cerebral localization, differentiation of brain function, and the correlation of function and structure became basic neuroscientific principles.

The reinforcement of brainhood in the nineteenth century is also apparent in the belief that the characteristic traits of geniuses, criminals and the mentally ill were inscribed in their brains. Such localizationism paralleled the elaboration of physiognomic, cranial, and bodily typologies; closely related to craniometry, the measurement of differences in brain weight and size dates back to the early days of physical and racial anthropology.

In the twentieth century, clinical and experimental methods joined forces, and provided ever more detailed data about the cerebral control of behavior and mental life. Some areas of brain research gained considerable media presence, and became paradigms of what the brain sciences could teach about human personhood. The work of Wilder Penfield (1891-1976) and Roger Sperry (1913-1994) are among those that had most public impact before the spread of brain imaging and the notion of brain plasticity. Penfield knew that before an epileptic seizure, patients experience an 'aura'. By provoking the aura through electrical stimulation of the brain, he determined the source of the seizure, and could remove the tissue. His sur-

gical procedure allowed him to map the cortical areas responsible for motor and somatosensory functions. Penfield's findings are represented in a well-known 'homunculus' whose features, drawn proportionally to the associated brain areas, include comically large fingers and lips.

Sperry, also a surgeon, is famous for his work on split-brain and complementary hemispheric specialization. A surgical treatment of epilepsy consisted of separating patients' hemispheres by cutting the corpus callosum. A typical post-operative finding was that patients shown an image in the left visual field cannot name or say anything about what they saw, because the image has arrived only on the right side of the brain, and speech is generally controlled by areas on the left. Yet they can grasp the corresponding object with the left hand, which is controlled by the right side of the brain. The same happens with touch, smell or sound stimulation. Starting with these observations, split-brain became a major neuroscientific topic, gave support to the modular model of brain organization, and inspired studies reaching into the areas of consciousness and brain plasticity.

Concurrently, philosophers of the Anglo-American analytic tradition, such as Sidney Shoemaker in *Self-Knowledge and Self-Identity* (1963) and later Derek Parfit in *Reasons and Persons* (1984), revived Locke's use of thought experiments (e.g. consciousness located in the little finger) as a conceptual instrument to think personal identity. Now, however, the puzzle-cases concerned the brain, mainly in the form of experiments, bisections, transplants, or extra-bodily conservation. This usage was so widespread that it seemed virtually impossible to discuss personal identity without having recourse to cerebral surgical fictions. At the same time, philosophers became increasingly interested in neuroscientific research and its consequences for understanding mind, consciousness and personhood.

Outside the academy, three processes seem salient since the 1980s: the usages and media presence of brain imaging, the somatization of the self, and the critique of brainhood.

Computerized axial tomography (CAT or CT scanning) is in use since the early 1970s. It employs computers to generate three-dimensional static pictures on the basis of two dimensional x-rays of 'slices' (Gr. *tómos*) of an organ. The development of single photon or positron emitters that stay in the bloodstream or bind to receptors in the brain led to the functional imaging techniques SPECT and PET, single photon emission computed tomography and positron emission tomography. These procedures allow the mapping of blood flow in the brain, and thus the visualization of localized brain activity during cognitive tasks. The discovery that MRI

(magnetic resonance imaging) also records blood flow changes measured by PET opened the way to functional MRI (fMRI), since the 1990s the dominant brain-mapping technique.

Brain imaging has had enormous impact outside the strictly neuroscientific and medical domains. Judy Illes, director of the Stanford Program in Neuroethics, has demonstrated the phenomenal expansion of fMRI-based research during the 1990s, with a dramatic decrease in studies of sensory and motor functions, and a corresponding growth of studies on cognition, attitudes, moral and social judgment, and religious experience. If fMRI has become a favorite tool to explore the functional essence of personhood, it is because the envisaged self is essentially that of a cerebral subject. Brain imaging technologies have also driven new 'neuro-' fields whose common purpose is to enrich, or even reform the human sciences on the basis of knowledge about the brain. Neuroaesthetics, neuroeconomics, neuropsychanalysis, neurotheology and neuroeducation have all emerged during the 1990s, 'decade of the brain'. Neuroethics, a rapidly growing new frontier discipline, explores the ethical (but also social and legal) issues that result from the findings and technologies of the basic and clinical neurosciences.

In the same period, brain images have flooded the public domain. In addition to sustaining the legitimacy of the 'neuro-' areas, this phenomenon affects how we understand the person-brain relation. In *Picturing Personhood. Brain Scans and Biomedical Identity* (2004), anthropologist of science Joseph Dumit examines how the media presents such images as if they were depictions of human types and realistic portraits of the self, resulting in cerebral typologies and corresponding human kinds (normal, healthy, depressed, handicapped...). On the positive side, brain images help destigmatize mental illnesses by pictorially asserting that they are no more than conditions of the brain.

The diffusion and social and individual impact of brain images relates to a second process: the somatization of the self. Sociologists Carlos Novas and Nikolas Rose, of the BIOS Center at the London School of Economics, identify a 'wider mutation' in personhood that they call 'somatic individuality'. The psyche, they write, 'is becoming flattened out and mapped onto the corporeal space of the brain itself. Such technological developments as neurochemistry ... and brain scanning ... appear to establish direct and "superficial" empirical and observable relations between the physiological and the ethical: between the brain and all that makes a human person'. Such analysis highlights the wider context of the emergence of the cerebral subject.

The third process in question is the critique of brainhood. The methodologies of the human sciences generally imply the critical posture that comes with trying to understand supposedly natural phenomena ('we are our brains') in historical and social contexts. Among philosophers, Kathleen Wilkes, in *Real People* (1988), defends a philosophy of personal identity 'without thought-experiments'. She takes the brain into account as a condition for 'real people'; for her, the problem with philosophical brain fictions is not that they are about the brain, but that they are theoretically impossible, and therefore irrelevant fictions. Other authors could be mentioned, not only philosophers, but neuroscientists themselves, who are critical of brain reductionism.

To close this sketch, I would like to connect brainhood and death. The brain-death criterion, widely used since the late 1960s, relies on the permanent cessation of signs of central nervous system activity, thus replacing the arrest of cardiac and pulmonary functions as signs of death. There are, however, partisans of cardiopulmonary criteria, as well as varieties of brain-death (whole-brain, higher-brain, brainstem).

Higher-brain criteria assume that such functions as consciousness, memory and reasoning define us as human beings. They therefore imply that anencephalic babies, persons in a permanent vegetative state, or advanced Alzheimer patients can be treated as if they were dead (as human *persons*), or at least that they can be allowed to die. That is why in a 1993 issue of the *Hastings Center Report*, Robert Veatch (professor of medical ethics at Georgetown University) announced 'the impending collapse of the whole-brain definition of death', and proposed to reduce the brain-death criteria to the 'irreversible cessation of the capacity for consciousness'.

The ultimate questions in the brain-death controversy are, What does it mean to be human? What parts of our bodies can be irreversibly damaged, and which psychological functions destroyed, in order for us to conclude that we are in the presence of an organism that, though alive, is no longer a human *person*? Some authors, for example Robert Blank in his book *Brain Policy. How the New Neuroscience Will Change Our Lives and Our Politics* (1999), ask if it is legitimate to distinguish between life as a strictly organic function, and *human* life 'as an integrated set of social, intellectual, and communicative dimensions'. What weight should these dimensions have in deciding to terminate life? Should locked-in syndrome patients be allowed to decide that they wish to be killed? Would such a patient be the same person if the preserved parts of his brain were transplanted into another body? We see here the tension between opera-

tional definitions of death that emphasize the use of standardized medical tests, and ontological definitions according to which consensus about death requires previous consensus on definitions of personhood or personal identity.

Finally, discussions about brain-death potentially raise the issue of 'brain-life'. The problem of the beginning of life – more precisely, of conferring moral and personhood status on a human embryo – offers a gripping symmetry to the problem of death, with markers shifting from fourteen days (formation of the primitive streak), to 23 weeks, when the fetus becomes viable. If the end of a person's life is defined by a brain state, shouldn't the same terms apply to its beginning? In both cases, the debates we just outlined illustrate the many social, philosophical, medical, and political issues involved in the view of the human being as cerebral subject.

2. PERSONHOOD AND THE RESURRECTION OF THE BODY

How does the Christian tradition illuminate these issues, and especially the person-brain relationship? In his speech of 21 November 2005 to the Pontifical Academies of Sciences and Social Sciences, His Holiness Benedict XVI recalled that, for Christianity, human beings are part of nature, but also transcend it by virtue of their being free subjects with moral and spiritual values; he also observed that 'according to God's intention, the person cannot be separated from the physical, psychological and spiritual dimensions of human nature'. Christianity asserts the irreducibility of human personhood to one of its dimensions. Being a person cannot be identified to having any one bodily organ – not even the organ whose 'emergent properties' are said to include what is otherwise called *soul*, or *personality*, or *psychological* and *spiritual life*. From the standpoint of the Church's *magisterium*, these assertions derive from 'God's intention' about human nature. From a historical perspective, however, divine intention and human nature are best approached through their changing definitions and uses. Of course, there might be some very basic phenomenological facts (such as erect posture, emphasized in Samuel Todes's *Body and World*) that contribute to determine our being-in-the-world. Such facts, however, are far from covering the historical diversity of notions of nature and human nature (see *Note* at the end of the paper).

Before going any further, here is an outline of this paper's argument:

- Brainhood and the cerebral subject have become a major anthropological figure of contemporary culture;

- such a figure is a statement about the self-body relation;
- it thus shows that the person-brain question is also that of knowing what part of the body we need in order to be ourselves;
- and this formulation highlights the extent to which the anthropology of brainhood breaks with the Christian tradition, specifically with the intrinsic corporality Christianity attributes to the human person;
- finally, as a fundamental expression of Christian anthropology, the doctrine of the resurrection of the body can be examined as an exploration of personal identity;
- nevertheless: I don't claim that debates about the resurrection doctrine can be retrospectively read as debates about personal identity; rather, I propose to consider them as a main context of gestation and elaboration of the very notion of personal identity in Western thought.

The place of the human body in Christian anthropology derives from the mystery of the Incarnation. Although there are reasons to see Christianity as inimical to the body, the Church has always condemned the denigration of matter and the human body. As historian of early Christianity Peter Brown demonstrated, such practices as permanent sexual renunciation can be understood as a means to live the body as 'temple of the Holy Spirit' (I Cor. 6.15), and to prepare it to be like the body of the risen Christ. In the Christian framework, the doctrine of the resurrection of the body is integral to the belief that our existence as persons is intrinsically corporeal, and that there is no such a thing as a disembodied human.

The position that became official in the early centuries of Christianity is that both the bodily and the psychological identity of resurrected individuals will be the same as that of the persons they were while alive. In this view, 'identity' in the sense of the reflexive *ipse*, necessitates 'sameness' in the sense of temporal continuity, of *idem* (used when two predicates are referred to the same subject or in the comparison 'the same as').

The resurrection doctrine generated questions about how decayed bodies will become whole again, or how to reconcile the properties of the 'glorious' and 'spiritual' resurrected body with the old ones of the terrestrial body. They entailed asking, for example, If all our flesh has to be restored to resurrected bodies, what happens with the matter we lose and replace throughout our lives? If I am eaten by a cannibal who assimilates my flesh to his own, where does the assimilated flesh end up, in the cannibal's resurrected body, or in mine?

These questions rehearsed the ontological quandaries of personal identity. Since Christ declared that ‘there shall not a hair of your head perish’ (*Luke* 21.18), the doctrine requires that resurrected bodies remain identical to the corresponding terrestrial bodies both qualitatively and physically. For each of us to be ourselves, we need to have bodies – not just any body, but our own. This view was challenged through three inter-related processes in the context of the seventeenth-century Scientific Revolution: the relative disincarnation of personhood, the psychologisation of personal identity, and the increasing focalisation on the brain of the body relevant for personal identity.

The corpuscular philosophy (espoused for example by Robert Boyle and Isaac Newton) explained the phenomena of nature by the motion, figure, rest, and position of interchangeable particles of matter. Differences among physical bodies did not derive from the essential nature of their substance, but from the mechanical properties of the composing particles. As Boyle and others noted, corpuscularianism implied that resurrected bodies no longer had to include exactly the same matter as the corresponding terrestrial bodies. Material continuity thus lost its importance as a constitutive element of personal identity; and this, as Locke realized, applied not only to resurrected persons, but to the very definition of personhood.

We have already seen that Locke separated substance and personal identity, and made the latter depend on a continuity of memory and consciousness. A person’s identity, he explained, reaches ‘as far as this consciousness can be extended backwards to any past action or thought’, and derives from the ‘same consciousness that makes a man be himself to himself’, regardless of the substances to which consciousness might be ‘annexed’. Since the seventeenth century, many authors responded to Locke; reactions to its consequences for the resurrection doctrine are among the earliest. For example, in *The resurrection of the (same) body asserted* (1694), the English divine Humphrey Hody acknowledged that sameness of body did not depend on the sameness of every particle. In order to preserve the Christian doctrine of the resurrection, he nevertheless insisted on the intrinsic corporality of personhood, and explained that three bodies animated by the same soul would be three different persons.

Even for Locke’s partisans, disincarnation was not total. As already mentioned, Enlightenment psychologists localized in the brain the mental powers necessary for identity. Resurrection discussions serve again as a historical magnifying glass. Several eighteenth-century thinkers speculated that our brains enclose a tiny indestructible particle that combines

the qualities of a brain and seat of the soul with those of an embryological germ. On Judgment Day, the particle will develop and restore each individual's original personality, as well as a body that, though materially different from the original, would still be the person's own because it will grow from a germ that belongs to the person. In this hypothesis, the crucial requirement for personal identity is the union of soul and brain; we've already quoted Bonnet's statement that 'If a Huron's soul could have inherited Montesquieu's brain, Montesquieu would still create'.

The resurrection of the *same* body became thereby implausible or unnecessary. By the end of the eighteenth century, the psychological problem of personal identity had pushed aside the issue of the numerical sameness of bodies. Traditional Christian eschatology was largely replaced by spiritism, spiritualism, and other beliefs (including reincarnation) about the persistence of personality after death. Still, a few nineteenth- and twentieth-century authors explored the relations between the resurrection of the flesh and scientific models and data. An updated version of the germ theory was proposed in 1888; a century later, some imagined that DNA and raw materials would be enough for the resurrection of the body.

But what body? If, following Locke, only a conscious personality is necessary for a fair Last Judgment, then resurrection might be limited to brains, or even to some brain structures. As German neuroscientist Detlef Bernhard Linke has asked, since only part of the brain is necessary to be a person, shall we need it whole to enjoy the beatific vision? The fraction that contains the information necessary for defining our self might suffice. But information might be stored in a machine. Hence the argument of physicist Frank J. Tipler in *The Physics of Immortality. Modern Cosmology, God, and the Resurrection of the Dead* (1994), for whom the resurrected *I* need be nothing other than the computer equivalent of my brain.

To sum up: From the early centuries of Christianity to present-day speculations, the doctrine of (and debates about) the resurrection of the body have elaborated questions about human identity, and functioned as a source of knowledge about the human being – not knowledge as a body of information, but as a process of *knowing* located at the crossroads of scientific and humanistic fields. They might therefore help us critically grasp the full significance of contemporary anthropologies of brainhood and the cerebral subject, at the same time that they argue for the inescapable role of the body in the constitution of human personhood.

Note on 'Nature'

Since awareness of the problematic polysemy of the notions of 'nature' and 'human nature' is not new, it may be useful here to make a small historical detour. In 1686, the chemist and natural philosopher Robert Boyle, a founding member of the Royal Society of London, published a *Free Enquiry into the Vulgarly Received Notion of Nature*. The gist of his argument was that the notion of nature had no place in natural philosophy. Nature, he observed, commonly plays the role of God's vicar, of an 'intelligent overseer' appointed 'to regulate, assist, and control the motions' of the different parts of the universe. Such reification (the word is obviously not Boyle's) detracts from the honor due to the creator, and 'defrauds the true God' by diverting acts of veneration and gratitude to 'the imaginary being' called *nature*. When God defined the laws of matter and motion, and endowed things with particular properties and powers, He set a course that neither needs nor allows for interventions other than His own. This view of the universe seemed to Boyle more consistent with religion than the one that took nature as God's 'lieutenant' or 'viceregent'.

For Boyle, the notion of nature was as prejudicial to science as it was to religion. In his opinion, accounting for phenomena by an appeal to nature precluded the search and formulation of precise 'physical reasons'. The word and its cognates should be discarded and replaced:

- (1) 'Nature' as *natura naturans* can be substituted by 'God'.
- (2) Insofar as the word designates 'that on whose account a thing is what it is', it can be replaced by 'essence'.
- (3) The idea of nature as that which belongs by birth to a living creature may be expressed by saying that the creature under consideration was born so or is so by temperament.
- (4) As for the notion of nature as internal principle of local motion, it could be couched in terms of a body moving in a certain way or direction spontaneously or as the result of determinate causes.
- (5) In other cases, the word 'nature' can be given up in favor of 'the established order, or the settled course of things'.
- (6) 'Nature' as the name for the powers belonging to a living body designates that body's constitution, temperament or mechanism, condition, structure or texture; when applied to 'greater portions of the world', it is better to use such expressions as 'system of the universe'.
- (7) And when 'nature' designates *natura naturata*, the universe itself, why not use this word, and speak of 'phenomena of the universe' or 'of the world'?

(8) Finally, as regards nature as 'goddess' or 'semi-deity', the best 'is not to employ it in that sense at all'.

Boyle's manifesto was unsuccessful. In a study of 1935, historian of ideas Arthur Lovejoy found 66 meanings of 'nature', some in literary and philosophical works, others (normative ones generally derived from these works) used in ethics, politics and religion. In *Human Universals* (1991), Donald Brown offered a list of about 300 items from *abstraction, baby talk and belief in the supernatural to distinguishing right and wrong, males more aggressive, poetic lines demarcated by pauses, promise, semantic category of giving, sexual attraction, sucking wounds, tools, and world view*. One wonders why it would be necessary or useful to use the concept of 'nature' to designate such heterogeneous and questionable collections of features. The historian's answer may consist, as Lorraine Daston and I suggested in our edited volume *The Moral Authority of Nature* (2004), to document the contexts and conditions in which 'nature' exerts its cognitive and ethical appeal.

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