

The Brain and the Self in the Comprehensive Realism of Donald M. Mackay

Ángela M. Suburo

Universidad Austral, Buenos Aires, Argentina
 amsuburo@austral.edu.ar

DOI: 10.17421/2498-9746-03-12

Abstract

The brain, the mind and the self are usually described as separate entities, although we intuitively recognize that they share some kind of relationship. The puzzle, however, begins when one tries to understand how a human being lives as a unique person with a brain, a mind and a self. Pondering about such questions is as old as humanity and different solutions have been given. In this short essay, I will compare the thinking of Donald MacCrimmon MacKay with some of the ongoing theories about the relationships between the brain and the self. MacKay's views about the person overcome current mechanistic and emergentist positions. In addition, his acknowledgment of a subjective perspective, which he called the I-Story, in tension with an objective Brain story, helps us to recognize and interact with the person even when the brain has been physically damaged.

CONTENTS

1	The Human Person	224
2	The Person in the Writings of Donald M. MacKay	225
3	Brain Microstates and Thought	227
4	“Out of Mind” Does Not Mean the Lack of a Self	228
5	Conclusions	230
	Notes	230

1 THE HUMAN PERSON

The human person is a powerful agent in the world, a self-conscious agent having the natural capacity to move herself as a whole, and to manipulate events in the physical world. As conscious agents, we can plan and successfully accomplish physical actions, which usually come through our deliberate intentions.¹ Our selves can intentionally affect other persons, and can be affected by them. The power of the human self is not something extrinsic or just added, but it is quite comprehensible in the broad world of intentional life, showing itself as the highest degree of self-organization and teleological control that we know in the universe.²

Several explanations and interpretations of the causal relationships in the brain-self problem are available.³ Dualism assumes that the brain and the self are separate things, leading to the unanswered question of mental causation and interaction between dissimilar entities. In a contrasting position, physicalism (materialism) assumes that everything obeys physical laws. Physicalism also collides with the unsolvable question of how the self can be explained or reduced to the activity of individual parts of the brain. Two conflicting views derive from physicalism. One is to deny the existence of the self, which would only be an illusion created by the brain.⁴

Emergentist materialism, on the other hand, considers mental states, events and processes as plain operations of the central nervous system which are emergent relative to its chemical and cellular components.⁵ In the words of Roger Sperry, “the special vital forces that distinguish living things from the non-living are emergent, holistic properties of the living entities themselves. They are not properties of their physico-chemical components nor can they be fully explained merely in terms of physics and chemistry. This does not mean they are in any way supernatural, mystical, or dualistic. Those who conceived vital forces in supernatural terms were just as wrong as those who denied their existence”.⁶ Nevertheless, there is not yet a clear definition of how the self appears as an emergent phenomenon from the brain.⁷

The human person can also be viewed from the hylomorphic point of view, which implies that understanding of human nature cannot be solely based on efficient and material causes. The latter suffice for most practical purposes, but grasping the whole human person also requires the reference to formal and final causes. Beyond the familiar molecular, cellular and other functional structures making up our bodies, we are also endowed with a substantial form, the soul that, in the tradition of Aristotle, is the first internal principle of being alive.⁸ Thomistic dualism predicted a correlation between

mind and brain, but not identity or reduction. In this case, the mind operates independently of the body, fashioning the human soul as a special kind of form. Nonetheless, Aquinas supported that every substance has only a single substantial form displaying various powers, thus acknowledging that the soul, and not the intellect, is the form of the body.⁹

2 THE PERSON IN THE WRITINGS OF DONALD M. MACKAY

MacKay theorized that the relationship between mechanistic brain science and the personal, moral and religious dimensions of human nature is much more harmonious and constructive than it is generally thought.¹⁰ This author supported a subjective approach, which he called the I-Story, in tension with the objective “Brain story”, as two equally valid modes of describing an isomorphic reality. Most important, he recognized that the I-story, where the I stands both for inside and also for the first person singular, is an inside not directly accessible to other persons.¹¹ Significantly, this inside gives rise to the thing we value most in other people, the possibility of engaging in the I-Thou relationship of dialogue, which is a great contributor to the I-story.¹²

The I-story depicts facts about us and our consciousness that can only be described in the first person singular. Brain science assumes that for every fact of experience recounted by the I-story, there is a corresponding fact about the state of the brain. Although this is just a working hypothesis, it has a large experimental support. However, there is no evidence that only one brain state corresponds to one fact of our experience. The same brain state could originate in different experiences, whereas a single experience could relate to several different brain states. We cannot assume that there is an exact correlation between the brain- and the I-stories, but we can theorize that no change in my conscious experience or my dreams is devoid of modifications in the structure and activity of my brain system. Note also that changes occurring throughout the body may also affect the Brain-story, and will also impinge on the I-story. The main conclusion of this brief description is that thinking is an activity of the person (I think). By contrast, it is nonsensical to say that my brain thinks, as nonsensical as saying that it is my mind that thinks. As stated by MacKay,¹³ our conscious experience is embodied in our brain activity, neither identical to the brain, nor quasi-physically interactive with it.

A conceptual gap still exists between the I- and the Brain-stories, enticing the unwary to a dualist or physicalist hypothesis as described before. However, MacKay’s interpretation goes in a different way, based on the lan-

guage and ideas of engineering and information theory. Engineering terms straightforwardly apply to the Brain-story, as its various states depend on chemical and neural circuits. Information language is best adapted to the I-story. As conscious agents, we pursue goals, evaluate their possible outcomes, and even if we do not take an immediate action we are prepared for those actions.¹⁴ “Form determining form gives rise to information flow”. Force determining force, as in physical phenomena, can involve a flow of energy, but not necessarily in the same direction as the information flow. Energy and information flows are two different notions. Thus, systems handling information may have more than one level of causation without any rivalry between them. Similarly, the Brain-story and the I-story are not opposites but equally valid complementary forms of causality and explanation. Determination in different levels does not mean that only one level is the real one, or one reigns above the other, or the other is something else.¹⁵

At difference with the various manifestations of dualism and epiphenomenalism, there is no reason to consider the Brain- and the I-story as different things. As conscious agents we always know our I-story, but are not automatically aware of our Brain-Story, suggesting a certain primacy of the first one. However, both are harmoniously complementary since they represent different aspects, but not two different levels, of a unitary situation. MacKay described his views as “comprehensive realism”. It is a kind of “realism” because we reckon not only our conscious experience, but also the physical data (learnt through our conscious experience) about our brains. It is comprehensive because we do not enclose these stories into two different compartments. We confront and correlate them, recognizing in this apparent dualism the “unity of the cognitive agent that each of us is”.¹⁶

In the words of Mackay, both “the interactionist and the materialist are each seeking to conserve a real truth about our human nature –the materialist recognizes that our physical embodiment invites (and rewards) analysis in the same physical terms as the rest of the material world. The interactionist recognizes that the reality of what it is to be a conscious agent is richer –has more to it– that can be described in material (or for that matter in mental) terms alone”. Mackay affirms that he wishes to put forward an option which can “do justice to what mechanistic materialism and Cartesian interactionism are respectively trying to conserve, without their negative implications”.¹⁷

I have not been able to find any reference to hylomorphism in MacKay’s works. Although from different points of view, both theories take us to a similar result, a unique and unified human person, where conscious experience is embodied in our brain activity, rather than interacting with the brain

from another world, or being identical to the brain in a reductionist way.

To illustrate these points, I will explore some brain mechanisms that, by their association with mental functions, may be unknowingly construed as interaction points between the brain and the self. On the other hand, neurological conditions that hinder communication with other persons, such as dementia, may be easily misidentified with a loss of the self, implying a separation between mind and brain. However, personhood and the human self can be recognized regardless of severe cognitive impairment.

3 BRAIN MICROSTATES AND THOUGHT

The modular paradigm, where brain areas would act as independent processors for specific cognitive functions does not explain cognitive operations and might be misleading.¹⁸ However, cognitive functions depend on transient neuronal ensembles organized at multiple spatial scales, from individual neurons, to neuronal populations, to large-scale networks. Current understanding acknowledges that the momentary global functional state of the brain can be reflected by the momentary configuration of the electrical field, as shown by multichannel electro-encephalogram (EEG) signals. Microstate analysis is a processing protocol that allows the definition of momentary states of the brain electrical activity. The alpha frequency band (8-12 hz) of the multichannel resting-state EEG signal can be parsed into a limited number of distinct quasi-stable states. Although a large number of possible maps can be recorded, most of the signal can be found in a few topographies. A single map remains dominant for about 80–120 ms before abruptly transitioning to another map. These periods of quasi-stability of single maps, known as microstates, display a rich syntax with parameters such as average duration (lifespan), frequency of occurrence, coverage (or dominance), topographical shape, amplitude of the global field power.¹⁹ Significantly, the transition probabilities of one microstate to any other are non-random. Transitions between microstates have been interpreted as the sequential activation of different neural networks. Functionally, they have been associated to ongoing mental processes. For example, microstates show different patterns when the person is involved in abstract thought than when thought is related to visual imagery.²⁰ Moreover, the microstate at the moment of appearance of an external stimulus influences the processing of that stimulus in the brain.²¹ These studies suggest that individual microstates may correspond to particular classes of mentation, and that ongoing mental processes influence how incoming information is processed and reacted to. These find-

ings led to consider microstates as the “atoms of thought”, an hypothesis postulating that: (a) the neural network(s) activated during a particular microstate represent different states of the conscious mind; (b) that each microstate is associated with a different class of mentation; (c) that microstates make up the conscious state.²² Brain science makes the “working assumption” (and it is no more than an assumption) that for each fact of our conscious experience, some matching story can be told in neural terms. However, nothing indicates that the correspondence is necessarily one to one. “Several alternative states of neural activity, for example, might be possible correlates of exactly the same experience ... but at least if I am having that experience, brain science assumes that something must be true about my nervous system, which would not be the case if I were not having it”.²³ Microstates probably are a hint of how our thoughts are embodied in our brain, but the conscious experience is not identical with brain activity nor is it quasi-physically interactive with it. Therefore, evidence supports parts a and b of the “atoms of thought” hypothesis, since microstates belong to the brain-story. By contrast, there is no place for part c, because this belongs to the I-story. In spite of the high degree of sophistication required for the detection of microstates, and their eventual correlation with thinking processes, these neurophysiological states do not have the relevant qualitative, intentional, and intelligible aspects of mental states.

4 “OUT OF MIND” DOES NOT MEAN THE LACK OF A SELF

People with dementia (*demens* = without mind) may be “out of their minds” but not without a self. As any other human person, they are agents of meaning. Although the I-story of the demented person seems unreachable, these persons know more than they can tell. Nonetheless, willingness is required to communicate with them.²⁴

Consciousness of one’s own mental states (self-consciousness) seems to be inseparable from memory; thus, severance of our connection with our past threatens our way of being-in-the-world. In the words of a patient, “like you are totally in a foreign land, and nothing is known to you. But at the same time you know you are supposed to know ... like looking for something that just isn’t there. Empty, lonely, isolated. But you keep looking for something familiar, that you know is there, but you just can’t see it”.²⁵ The onset of dementia may be viewed as a threat to self, giving rise to attempts of regaining control through a range of psychological strategies. Thus, patients can usually acknowledge their memory problems, indicating

a basic awareness of these changes, but make capricious judgements about their meaning and impact.²⁶ Awareness of the disease also depends on psychological and social factors, such as mood, self-concept and personality.²⁷ Alzheimer's disease patients have difficulties in mentally travelling back to a more or less distant past to reexperience past events. By contrast, these patients are still able to remember decontextualized information up to at least the middle stage of the disease.²⁸ Dementia is accompanied by alterations of self-consciousness, but not by its abolition. In these patients, lack of awareness and self-consciousness include separate aspects, such as the awareness of the disease, of perception, of one's own history, and of one's body, as well as a moral consciousness. Remarkably, Alzheimer's disease patients conserve an almost normal capacity for introspection, and do not show changes in moral judgement. Thus, these observations support the maintenance of self.²⁹

With progression of the disease, self-awareness ability decreases and patients appear unable to understand "What the self wants to do" (the self-intention) and "What the self wants to be done" (the self-desire). Next they become unable to understand "What the self is doing" (the self-situation). Finally, being unable to make the psychological distinction between the self and others, they become unable to perform human relationships, and to carry out activities of daily living". However, even at these advanced stages, embodied selfhood remains as evidence of a fundamental level of existence that does not involve cognitive consciousness.³⁰ In spite of the apparent meaninglessness and irrelevance of speech in dementia, persons interacting with a demented patient can recognize an I-story. Even if this story seems disconnected from present circumstances, or obviously fabricated, the story clearly belongs to the self ("when I noticed that his front tooth was broken, I asked, 'What happened?', and the subject cooked up a story, saying, 'My daughter took me for a ride in her car but she suddenly and unexpectedly braked very hard. That's why my tooth is broken'").³¹ The I-story is not reflected by the textual aspects of the narratives, but by its performative and collaborative aspects. When linguistic and other cognitive abilities are impaired, the person with dementia will use other available assets. Autobiographical stories will be mainly told using embodied experiences like visual perception and motor actions, and gesticulation, together with various forms of body language, which may replace verbal communication.³²

5 CONCLUSIONS

Human minds do not exist independently of human brains, at least on this life. Brain processes can be isolated, and it can be shown that they are mechanistically important for human functions. However, they cannot represent the human person as a unit. On the other hand, human persons may be subjected to brain dysfunction or damage, as during anesthesia or neurodegenerative diseases. Nonetheless, a human self can still be recognized in demented and psychotic persons, even if we must resort to unusual forms of communication. The Brain-story and the I-story, as proposed in MacKay's comprehensive realism, provide a coherent model to understand the unity of the person in the physical world.

NOTES

1. D.M. Mackay, *Selves and brains*, «Neuroscience», 3/7 (1978), pp. 599–606.
2. J.J. Sanguinetti, *Can the Self be Considered a Cause?* in G. Auletta, I. Colage, M. Jeannerod (eds.), *Brains top down: is top-down causation challenging neuroscience*, World Scientific, Singapore, London 2013, pp. 121–142.
3. T. Crane, S. Patterson, *Introduction*, in T. Crane, S. Patterson (eds.), *History of the Mind-Body Problem*, Routledge, London and New York 2000, pp. 1–12.
4. D.M. Wegner, *Precis of the illusion of conscious will*, «Behav Brain Sci», 27/5 (2004), pp. 649–692. T. Metzinger, *The No-Self Alternative*, in S. Gallagher (ed.), *The Oxford Handbook of the Self*, Oxford University Press, 2011, pp. 1–21.
5. M. Bunge, *Emergence and the mind*, «Neuroscience», 2/4 (1977), pp. 501–509.
6. R.W. Sperry, *Changed concepts of brain and consciousness: some value implications*, «Zygon», 20/1 (1985), pp. 41–57.
7. T.L. Griffiths, N. Chater, C. Kemp, A. Perfors, J.B. Tenenbaum, *Probabilistic models of cognition: exploring representations and inductive biases*, «Trends in Cognitive Sciences», 14/8 (2010), pp. 357–364. K. Rauss, G. Pourtois, *What is bottom-up and what is top-down in predictive coding?* «Frontiers in Psychology», 4/article 276 (2013), pp. 1–8. Y.M. Yufik, K. Friston, J.B. Fritz, *Life and Understanding: The Origins of "Understanding" in Self-Organizing Nervous Systems*, «Frontiers in Systems Neuroscience», 10/December (2016), pp. 1–23.
8. R. Pasnau, *Mind and hylomorphism*, in J. Marenbon (ed.), *The Oxford Handbook of Medieval Philosophy*, Oxford University Press, Oxford 2012, pp. 486–504.
9. R. Pasnau, o.c.
10. D.M. Mackay, *Selves and brains*, o.c.
11. D.M. Mackay, *Behind the eye*, Basil Blackwell, Inc., 1991, p. 3
12. D.M. Mackay, *Machines, brains, and persons*, «Zygon», 20/4 (1985), pp. 401–412.
13. D.M. Mackay, *Behind the eye*, o. c., p. 9.
14. Non-living systems, such as a thermostat, can also produce activity regulated by a goal. This kind of agency does not presuppose consciousness, at least in

- the sense that human beings are (D.M. Mackay, *Behind the eye*, Basil Blackwell, Inc., 1991, p. 45. Some authors suggest that machine consciousness is possible, but this is founded in the hypothesis that subjective experience is the same as a system's capacity to integrate information (G. Tononi, *An information integration theory of consciousness*, «BMC Neuroscience», 5/42 (2004), pp. 1–22; however, a fully plausible explanation of the conscious being is at present not available, neither shared by psychology, philosophy and engineering (A.A. Fingelkurts, A.A. Fingelkurts, C.F.H. Neves, “Machine” consciousness and “artificial” thought: An operational architectonics model guided approach, «Brain Research», 1428 (2012), pp. 80–92.
15. D.M. Mackay, *Behind the eye*, o. c., p. 43-47.
 16. D.M. Mackay, *Behind the eye*, o. c., p. 57-61.
 17. D.M. Mackay, *Behind the eye*, o. c., p. 62.
 18. S.L. Bressler, V. Menon, *Large-scale brain networks in cognition: emerging methods and principles*, «Trends in Cognitive Sciences», 14/6 (2010), pp. 277–290.
 19. A. Khanna, A. Pascual-Leone, C.M. Michel, F. Farzan, *Microstates in resting-state EEG: Current status and future directions*, «Neuroscience and Biobehavioral Reviews», 49 (2015), pp. 105–113.
 20. D. Lehmann, W.K. Strik, B. Henggeler, T. Koenig, M. Koukkou, *Brain electric microstates and momentary conscious mind states as building blocks of spontaneous thinking: I. Visual imagery and abstract thoughts*, «Int J Psychophysiol», 29/1 (1998), pp. 1–11.
 21. J. Britz, C.M. Michel, *State-dependent visual processing*, «Front. Psychol.», 2 (2011), pp. 370.
 22. D. Lehmann, W.K. Strik, B. Henggeler, T. Koenig, M. Koukkou, o.c.
 23. D.M. Mackay, *Machines, brains, and persons*, o.c.
 24. E. Barnett, *Including the person with dementia in designing and delivering care: I need to be me!* Jessica Kingsley Publishers, 2000, pp. 55-56.
 25. K. Parsons-Suhl, M.E. Johnson, J.J. Mccann, S. Solberg, *Losing One 's Memory in Early Alzheimer 's Disease*, «Qualitative Health Research», 18/1 (2008), pp. 31–42.
 26. L. Clare, *Managing threats to self: Awareness in early stage Alzheimer's disease*, «Social Science and Medicine», 57/6 (2003), pp. 1017–1029.
 27. L. Clare, S.M. Nelis, A. Martyr, J. Roberts, C.J. Whitaker, I.S. Markova, I. Roth, R.T. Woods, R.G. Morris, *The influence of psychological, social and contextual factors on the expression and measurement of awareness in early-stage dementia: Testing a biopsychosocial model*, «International Journal of Geriatric Psychiatry», 27/2 (2012), pp. 167–177.
 28. S. Kalenzaga, A. Bugajska, D. Clarys, *Self-reference effect and auto-noetic consciousness in Alzheimer disease: evidence for a persistent affective self in dementia patients*, «Alzheimer disease and associated disorders», 27/2 (2013), pp. 116–122.
 29. E.M. Arroyo-Anllo, A.T. Boustouf, M.N. Fargeau, B. Orgaz Baz, R. Gil, *Self-Consciousness Deficits in Alzheimer's Disease and Frontotemporal Dementia*, «Journal of Alzheimer's disease: JAD», 55 (2016), pp. 1437–1443.

30. P.C. Kontos, G. Naglie, *Tacit knowledge of caring and embodied selfhood*, «Social Health Illn.», 31/5 (2009), pp. 106–116.
 31. T. Yokoi, H. Okamura, *Why do dementia patients become unable to lead a daily life with decreasing cognitive function?*, «Dementia», 12/5 (2013), pp. 551–568.
 32. L.-C. Hydén, *Storytelling in dementia: embodiment as a resource*, «Dementia (London, England)», 12/3 (2013), pp. 359–367.
-

© 2017 Ángela M. Suburo & Forum. Supplement to Acta Philosophica



Quest'opera è distribuita con Licenza [Creative Commons Attribuzione - Non commerciale - Non opere derivate 4.0 Internazionale](https://creativecommons.org/licenses/by-nc-nd/4.0/).

[Testo completo della licenza](#)