Cognitive Sciences and Iain Banks's Novels: *The Wasp Factory* and *Use of Weapons*

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Abstract: The aim of this paper is to discuss Iain Banks's *Use of Weapons* (1990) and *Wasp Fac*tory (1984) in the context of the presentation of the workings of the human mind in both novels – paying special attention to the relationships this presentation has with the major breakthroughs made in the field of cognitive sciences. Thus, I will provide a brief analysis of how the discoveries made in cognitive sciences have transformed common ideas about consciousness and humanness. Subsequently, I shall analyse the way in which Iain Banks examines the workings of the human mind, as well as investigates the topic of humanness. In this essay I shall argue that Iain Banks's novels are preoccupied with discussing and demolishing dualisms, such as mind/body, emotions/reason, or nature/culture: this phenomenon is, according to me, likely to be correlated with the ideas popularised by the discoveries made in the field of cognitive sciences.

Key words: Iain Banks, cognitive sciences, mind, consciousness, dualism

The ideas concerning the indispensability of collaboration between scientists and humanists are not new: in 1959, Charles Percy Snow, a British scientist and novelist, published his famous lecture entitled *The Two Cultures*, in which he postulated that the 20th century is permeated by a deepening mutual incomprehension between scholars representing sciences and humanities.[1] According to Snow, the 20th century witnessed the spreading of the belief in the mismatch between materialist and biology-oriented worldview of science on the one hand, and the humanist investigations into socio-cultural

[1] More in: Charles P. Snow, *The Two Cultures*, 1959 (London: Cambridge University Press, 2001).

themes on the other. Nevertheless, the 1950s saw the rise of an intellectual movement, known nowadays as the cognitive sciences (Miller 2003, 141), which may be regarded as one of the reasons for the science–humanities dichotomy to be brought into question. The growing interest in the workings of the human mind was caused by developments in the nascent fields of neuroscience and computer science, the field of artificial intelligence included. George A. Miller (2003, 143), one of the founders of cognitive psychology, states that

> by 1960 it was clear that something interdisciplinary was happening … What you called it didn't really matter until 1976, when the Alfred P. Sloan Foundation became interested. The Sloan Foundation had just completed a highly successful program of support for a new field called 'neuroscience' and two vice-presidents of the Foundation, Steve White and Al Singer, were thinking that the next step would be to bridge the gap between brain and mind. They needed some way to refer to this next step and they selected *cognitive science*.

Thus, the fascination with the brain, and the mind, has been growing. Due to advances in biology and computer science, the human nervous system could finally be studied in detail, and, in fact, the last decade of the 20th century was dubbed the Decade of the Brain (Nalbantian 2011, 3). Developments in research on brain functions have been capacitated by sophisticated technologies; cognitive psychologists are engaging in studies and experiments designed to elucidate and reassess the intricacies of human thought processes, philosophers are focusing on the matters of cognition, while anthropologists are making attempts at explaining the evolution of cognitive capacities (Cave 2016, 12).

In other words, grand developments in cognitive sciences led to the rise of various novel approaches applied to explaining human behavior, such as cognitive psychology, neuroscience, or evolutionary psychology. In the study of the human mind and its products, the borders dividing the scientific and humanistic disciplines became blurred. Already in the 1970s, Miller argued that in cognitive science "at least six disciplines were involved: psychology, linguistics, neuroscience, computer science, anthropology and philosophy" (2003, 143). I shall not delve, however, into the investigation

of different scientific approaches applied to the workings of the human mind: my point is rather to draw attention to the fact that in the last few decades, in sciences and humanities alike, a growing focus on the mind can be observed. This fascination has also entered the public domain, "attracting enormous attention and interest: hardly a day passes without some aspect of cognitive research being reported in the media" (Cave 2016, 13). Since the human brain has begun to be studied in an in-depth manner, its nature has become more and more puzzling, raising questions such as: how exactly does an absurdly heavy, energy-consuming snarl of nervous tissue create art, technology or the feeling of fear? How does it incite the sense of self? How does it contribute to the emergence of culture?

Mind and its products, such as literary fiction, religion, science or technology, has fallen subject to cross-disciplinary research, while attempts at breaching the divide between humanities and science have multiplied. According to Terence Cave (2016, 16), this current, interdisciplinary dialogue on cognition itself may be regarded as a bridge between C. P. Snow's 'two cultures': "neuroscientists talk to experimental psychologists, who themselves talk to philosophers and linguists; all of them, from their different viewpoints, are capable of throwing light on the immensely complex object of study that we call human thought or human cognition and its products". Literature, regarded by Cave (2016, 14) as "the most revealing *product* and *symptom* of human cognition, an outgrowth of one of the most fundamental of human cognitive instruments, namely language itself", has also been analysed from the cognitive perspective: memory studies have proven that the functions of the human brain may serve as a "reliable basis for linking literature and the allied arts to the basic human condition" (Nalbantian 2011, 2), and publications such as, for instance, Patricia Churchland's *Neurophilosophy: Toward a Unified Science of the Mind-Brain* (1986), Antonio Damasio's *Self Comes to Mind: Constructing the Conscious Brain* or Patrick Hogan's *The Mind and Its Stories: Narrative Universals and Human Emotions* (2003), have provided a new terrain for transdisciplinary studies of human affects, consciousness and memory. Works like the *Memory Process: Neuroscientific and Humanistic Perspectives* (2010), Mary Thomas Crane's *Shakespeare's Brain: Reading with Cognitive Theory* (2001), or William Flesch's *Comeuppance: Costly Signaling, Altruistic Punishment, and Other Biological Components of Fiction* (2009) illustrate that written works are nowadays being discussed from the point of view of natural sciences, as it is now common knowledge that biological phenomena,

such as consciousness, affects or recall, are involved both in the production and in the reception of written works.

Literature has always grappled with the topic of what it means to be human, as it has always investigated the major changes in scientific paradigms, questioned technological advancements, and attempted at predicting how human life can be influenced by these transformations in the future. In the second half of the 20th century, ideas of humanness were changing rapidly due to the discoveries made in the fields of bio(techno)logy and artificial intelligences as well as thanks to the developments made in the nascent, cross-disciplinary field of cognitive sciences. My aim is, however, not to offer an outline of a cognitive approach capable of providing an analytical framework for literary works, but to argue that contemporary fiction itself has been altered and influenced by the discoveries made in cognitive sciences, as mediated both by scientific works, and by reports in popular media, since – as I have already mentioned – cognitive sciences have become a significant part of the public domain.

At this point, it is important to note that many of such brain studies related reports are without doubt inaccurate, exaggerated, superficial and overly enthusiastic. It could not, however, be otherwise, since their point is to attract the public attention; and my argument is that they have attracted the attention of Iain Banks (1954–2013): a Scottish writer of both mainstream and science fiction. Banks's works are, in my opinion, permeated by a vivid fascination with the workings of the mind, offering multiple investigations into what makes us human. The writer in question is preoccupied with analysing and demolishing dualisms, such as mind/body, emotions/reason, or nature/culture.

Therefore, I will discuss Banks's *Use of Weapons* (1990) and *Wasp Fac*tory (1984) in the context of an intellectual zeitgeist generated by the developments in cognitive sciences. Combining references to cognitive studies with literary theory, I shall discuss the way in which Iain Banks's literary oeuvre corresponds with the post-1950s cognitive revolution. I believe that the application of a cross-disciplinary approach may shed new light upon the novels discussed, as Banks's descriptions of the workings of the human mind may be argued go in line with the discoveries made in the field of cognitive studies. In order to achieve my aim, I am going to draw on insights from cognitive sciences – with emphasis laid on the discoveries that cross over into the public domain, since media interest in brain studies has contributed to transferring

some of the ideas to other contexts: in this particular case, Iain Banks's fiction. This is the approach I decide to adopt, at the same time emphasising the fact that such transfers – be it within the scope of Banks's novels, or my academic paper – require simplifying scientific concepts, or presenting them in a perfunctory way.

To sum up, I am going to discuss Banks's fiction focusing upon its presentation of the workings of the human mind – paying special attention to the relationships this presentation has with the major breakthroughs made in the field of cognitive sciences. I am going to relate to chosen ideas from the field of brain studies, some of which became well-known at the time when Banks wrote his novels, but some of which became popular later on, or even very recently. While with certain ideas Banks could not have been acquainted, my argument here is that the fiction in question – apart from being inspired by cognitive studies – has a universal quality because of its focus on characters' psychology and the intricacies of consciousness. The novels' characters behave and think like real humans; hence, they may be analysed with the application of concepts drawn from the field of brain sciences and cognitive literary criticism. By no means, however, do I wish to argue for the inadequacy of non-cognitive approach as regards Iain Banks's literature – my point is rather to outline a possible new approach to the author's fiction.

Banks published his first novel, *The Wasp Factory*, in 1984. Since then, he was writing on a full-time basis, and *Consider Phlebas,* published in 1987, started his popular science-fiction series called *The Culture*. The writer's two outputs, speculative and mainstream fiction, are published under different names: Iain M. Banks and Iain Banks, respectively. Nevertheless, the border separating the two branches of Banks's writings is illusory, as it is easily breached by the presence of ceaseless overlaps and intertextual references (Colebrook 2010, 1). In fact, in *Complicity: A Reader's Guide* (2002), Craig Cairns states that Banks's novels are themselves connected by references to doubling or split personae, while Martyn Colebrook (2010, 2) observes that Banks's "authorial practice and presentation of identity are oriented around the structuring principle of the Double, which seems an appropriate image for an author who has gained success under two names and whose work is highlighted for its consistent bridging of gaps between the *high* and the *low*, the *popular* and the *literary*".

Banks vividly uses the motif of the double in *Use of Weapons*: the novel consists of two story lines, both of which form a fragmented biography

of Cheradenine Zakalwe, a Culture's mercenary, whose job is intervening in the politics of foreign societies. The Culture itself is a federation of intelligent species inhabiting thousands of galaxies. It is fully self-sufficient and run by technology: from bioengineering and omnipresent electronics, through sentient drones, to super powerful and omniscient machines, called Minds, who rule the Culture in its entirety. In *Use of Weapons*, one story line recounts the protagonist's present, while the second serves as a recollection of his past presented in a reverse chronology: midway through the backward-moving narrative, the reader discovers that Cheradenine was brought up in an aristocratic family, together with two sisters, Livueta and Darckense, as well as with his cousin, Elethiomel. The young men were engaged in a conflict, which provoked Elethiomel to betray his adopted family in order to gain political power. As a consequence, Elethiomel waged a civil war against Cheradenine, which he finally won, due to his cruel and cunning methods: he had sent Cheradenine a chair constructed of Darckense's bones, consequently forcing his opponent into depression and despair. The parallel line of narration recounts Zakalwe's mysterious quest to find his sister Livueta and ask her for forgiveness. Not until the last pages of the novel do we learn, however, the truth about the novel's protagonist: in one of the final scenes it is explained that the man widely known as Cheradenine Zakalwe is in fact Elethiomel, who has appropriated his cousin's identity, having transformed his guilt-ridden memories into self-serving fictions.

The issue of doubleness is undoubtedly present in *Use of Weapons* as far as narrative and character construction is concerned. It could, however, be argued that Banks applies the motif of the double not only to transgress the border separating "the *popular*" and "the *literary*" (Colebrook 2010, 2), or in order to engage in intertextual play with Scottish literary tradition, which is by critics associated with a prominent usage of the figure of the double (Middleton 1995, 20). In fact, in an interview with James Robertson, Banks claimed that he was "very dubious" about saying that his writings should be interpreted as Scottish works (1989/1990, 26–27). It may hence be argued that Banks explored the topic of dualisms in order to discuss and question popular dichotomies, such as mind/body, emotions/reason, science/humanism, or nature/culture. In other words, I would like to present Banks's interest in the figure of the double as stemming from his interest in the human mind, human consciousness, or the preoccupation with the general concept of what distinguishes us as humans.

One of the dualisms well established in culture is the mind/body dualism, which implies that the body equals physical matter while the mind does not. Even though mind and body have been already driven apart by Plato or St. Paul, it is Descartes who dignified the dualism in question by depriving the mind of any physical features. For centuries, a breach had existed between matter and idea, as well as between mind and material substrate. However, as the studies of consciousness have been brought into a biological context, the mind/body problem, otherwise known as substance dualism, gradually dispersed: cognitive sciences provided a counterbalance to the long-established prevalence of a traditional rationalist idea of the body as a container for the independent mind, as well as offered an alternative to the postmodernist view that the body can be compared to a blank slate to be culturally inscribed by disembodied discourses. Consciousness is no longer an ontologically distinct substance, "but rather an emergent property of matter put together in a sufficiently complicated way" (Slingerland 2008, 10). While according to 'first generation' cognitivist studies the human mind could be likened to a computer, or a thinking machine, "current 'second-generation' approaches insist … on the continuity between body and mind (Cave 2016, 28). In other words, it has become clear that the mind and its sense of self are the products of processes happening in the material body. These concepts are, in my opinion, present in Banks's *Use of Weapons*, where a drone tells Zakalwe that his "brain is made up of matter" and "organised into information-handling, processing and storage units" by genes and biochemistry (1992, 256). To Banks, the human brain equals pure materiality, out of which grow all the ideas we possess about the self and the world we are immersed in. Consciousness is not reserved for biological organisms. In order for it to exist, one primary condition has to be fulfilled: matter has to reach a sufficient level of complexity. Therefore, in *Use of Weapons* Banks presents a universe populated by various machines capable of thinking, feeling, and originating creative ideas: the reader comes across multiple sentient drones, intelligent pieces of armor, or super-advanced computers called the Minds. As one of the drones notes: a computer's mind is very similar to the human mind, since it "is also made up of matter, but organised differently" (256). Banks's fiction undoubtedly exhibits a preoccupation with the idea of consciousness arising from matter, and not understood as an outcome of possessing some inherent, immaterial substance.

I believe that Banks's preoccupation with materiality and substance monism can be associated with the influence the cognitive revolution had on culture. Humans, as presented in the *Use of Weapons*, are heavily body-oriented, and they tend to value pleasures of the flesh: thanks to "genofixing" they can live virtually forever, producing pleasure-inciting and pleasure-enhancing drugs in their bodies, and being able to commit most of their time to joyful activities, such as travelling, games, sports or sex. Therefore, the Culture's citizens could be described as exponents of hedonistic philosophy. In one of the descriptions Banks states:

> Their machines could do everything else much better than they could; no sense in breeding super-humans for strength or intelligence, when their drones and Minds were so much more matter- and energy-efficient at both. But pleasure... well, that was a different matter.
> What else was the human form good for? (260)

The writer often provides detailed descriptions of visceral and emotional experiences of his characters, and in *Use of Weapons* one of the Culture's drones states that "sensory stimulation", which equals "feeling touching, tasting, smelling, hearing, and seeing", allows for the emergence of sentience (256). At the same time, the most critical moments in Zakalwe's life are all related to feelings, experienced simultaneously on sensory and psychological levels:

> He tried to remember the garden and the smell of flowers, the way he sometimes did whenever the fighting started to seem just too futile and cruel to have any point whatsoever, but for once he could not conjure up that faintly-remembered, beguilingly poignant perfume, or recall anything good that had come out of that garden (instead he saw again those sun-tanned hands on his sister's pale hips, the ridiculous little chair … and he'd wanted to weep and scream and tear it all down with his own hands …) (338–339).

In fact, events rich in emotional content pertain "sharp and fresh" in Zakalwe's memory, regardless of how many years have passed. Non-emotionally charged events, however serious they might be, become "dim

and vague as something seen through the storm of snow" (283). In general, Iain Banks focuses on describing experiences possessing high emotional salience, no matter whether the episodes in question are actually happening in the character's lives or just being recalled by them.

For Banks, men are material, while their affects, recollections and a sense of self are all products of biological processes. With the cognitive revolution, consciousness, memory, reasoning or emotions have begun to be more often interpreted as products of the wildly complex human biology. For instance, scientists studying memory concluded that each single remembrance is a complex memory of sensory and motor interactions (Damasio 2010, chap. 6). In other words, sensory experiences are indispensible for memory. They also constitute substrate for the emergence of emotions: and emotions themselves, contrary to what was proposed in the traditional James-Lange "read out" theory,[2] shall not be analysed separately from the so-called reason. Consciousness is not purely cognitive: feelings are indispensible for the emergence of awareness, or for what Jaak Paanksepp and Lucy Biven (2012, chap. 1) call *affective consciousness*. As Edward Slingerland (2008, 12) notes, referring to various discoveries made in the fields of cognitive studies and neuroscience:

> In the field of behavioral neuroscience, a picture of human reasoning and decision making has emerged that strongly suggests a constitutive role for emotions and other somatic biases, and in economics there has been a shift away from abstract rational-actor theories toward models incorporating inherent cognitive biases and "fast and frugal" heuristics.

As I have already noted, emotions play a vital role in *Use of Weapons*: "reverberating guilt" accompanies Zakalwe throughout the whole novel, inciting and permeating the protagonist's memories (Banks 1992, 148), as well as ultimately leading him to the appropriation of his cousin's identity. In other words, an unbearable feeling of guilt, and all the visceral-emotional reactions related to it, force Zakalwe to ultimately reconstruct his sense of self. Thus,

[2] Proposed over a century ago, the James-Lange theory postulated that affects are created when the neocortex analyses the physiological expression of emotion within the brain. In other words, if an individual smiles, the higher cognitive part of the brain (the neocortex) reasonably "reads out" the physiological response as a particular emotion, which in this particular case equals joy. Therefore, consciousness is, in general, a faculty of the so-called reason (Panksepp and Biven 2012, chap. 1).

it may be argued that Banks's work goes in line with the contemporary scientific reluctance towards the emotion/reason dualism, since the Scottish writer presents bodily sensations and affects as crucial ontological experiences, constituting a building block of "being", or allowing for the (re)construction of the protagonist's self-awareness.

On the one hand, men know that they are purely material and biological beings, while on the other hand they tend to exhibit a strong, common belief in the immaterial mind or soul which makes them truly human (Slingerland 2008, 26). As Paul Bloom argues in *Descartes' Baby: How the Science of Child Development Explains What Makes Us Human* (2004), the reason for this belief is a natural human propensity for dualism. To phrase this argument differently: the bulk of nervous tissue, called the brain, contributes to the emergence of consciousness, together with the existence of dualistic thinking, which in turn gives rise to a potent illusion that possessing a transcendental soul differentiates us from mere matter (Slingerland 2008, 281–282). Hence, dualisms advocated by Plato and Descartes were not accidental, but they rather constituted the development of

> [a]n intuition that comes naturally to us, as bearers of theory of mind: agents are different from things. Agents actively think, choose, and move themselves; things can only be passively moved. The locus of agents' ability to think and choose is the mind, and because of its special powers the mind has to be a fundamentally different sort of entity than the body.

In other words, the theory of mind is a universal tool used to understand reality "in terms of agents, their states of mind, and the sequences of their actions" (McCauley 2011, 185), and it clearly contributes to the fact that humans fall victim to dualistic illusions.

At this point I would like to refrain from analysing *Use of Weapons* in more detail, and to focus on Banks's debut novel, *The Wasp Factory* (1984) instead. I justify this choice by the fact that my paper aims at providing an outline of, or an introduction to, the discussion of the connections existing between Banks's literature and the developments made in cognitive sciences, and an in-depth analysis of one particular novel could not provide enough relevant material. Undoubtedly, *The Wasp Factory* and *Use of Weapons* bear close resemblances: both are organised around the themes of the workings of human

mind and the emergence of consciousness, both offer the stories of characters constructing their personal narratives, and both investigate the topic of dualisms. Nevertheless, I assume that *The Wasp Factory* may serve as a good exemplification of Banks's views concerning the general human propensity for dualist thinking, complementing the discussion of *Use of Weapons*, and thus constituting a useful illustration of the possible relationships between literature and the cognitive sciences.

The Wasp Factory is narrated by Frank Cauldhame, a teenager living on a secluded island together with his father, Angus. At the beginning of the story, Frank discovers that his insane brother, Eric, has escaped from the asylum and is now on his way home. Anticipating Eric's imminent arrival, the reader gradually gets acquainted with the story of the main protagonist: in early childhood, Frank has been attacked by a dog, which has bitten off the boy's genitals, leaving him forever impaired. Frank possesses no birth certificate and is subject to home-schooling, so he spends most of his time on the island: blasting things (and animals) with self-made bombs, hunting, drinking alcohol, and attempting to make telepathic contact with Eric.

Most importantly, Frank is the creator of the Wasp Factory: a complex device comprising of an old clock-face equipped with twelve branching corridors, and used in order to predict the future. Frank places wasps in the Wasp Factory: depending on which corridor the wasp chooses, it dies in a different manner (be it, for instance, drowned, consumed by fire, or eaten by a spider). Frank regards the wasps' deaths as prophecies relating to his, and his relative's, existence. As the novel progresses, the reader learns the truth about the main protagonist: surprisingly, he is a not an adolescent boy, but a girl. The story about the dog's attack was invented by Angus, a mad scientist who subjected his daughter Francis to chemical treatment in order to make her male. Angus hated women, and he made Francis/Frank hate them too: as a consequence, the teenager strongly believed in an illusion of boyhood.

Now that I have provided a brief summary of the story, I shall discuss the way Banks refers to the topic of dualistic thinking in *The Wasp Factory*.[3] As I have already mentioned, the novel is set in the confined space of a small, secluded island, which offers almost laboratory-like conditions to observe

[3] Banks's obsession with doubleness has been noticed by Paul Kincaid, who observes that "every member of the Cauldhame family seems to be both damaged and doubled" (2013, 29). Frank has his mirror in Eric, Angus in his ex-wife, Agnes, and Frank's little cousin Paul in the family dog, Saul.

Frank's personal development, and this possibility is further augmented by the fact that the novel assumes the form of a first-person narrative. Via limiting the representation of reality to Frank's perspective, Banks points to the fact that the brain, with all the illusions it creates, is the only way to access and interpret reality. Frank's brain makes him convinced that he is a powerful, knowledgeable young man, who possesses, for instance, telepathic power over his mad brother. At a certain point of the novel, he states:

> I felt my stomach clench itself involuntarily and a wave of what felt like fiery excitement swept up from it … I felt it transport me, from one skull through another to another. Eric! I was getting through! I could feel him … (Banks 1998, 126).

In addition to believing in his extraordinary spiritual powers, Frank perceives the island he lives in as the world of animate matter, where catapults live "breathing with you, moving with you, ready to leap" (27–28), a kite "slices its tail and flexes its hollow bones" (91), while the Wasp Factory "tells" when something important is going to happen (7). Frank definitely possesses the universal cognitive tool, called the theory of mind, which facilitates categorising the surrounding world into agents and objects, and he does not refrain from ascribing things with intentions and sentience: the most prominent example being the future-predicting, omniscient Wasp Factory itself.

As I have already mentioned, the theory of mind contributes to the fact that people think in a dualistic manner, and naturally divide their own being into the mind and the body, valuing the first over the second. In the late 1970s and in the 1980s (when Banks published his first novels), Darwinism had already become the predominant account for explaining human nature, while cognitive sciences were developing staggeringly fast. This contributed to the gradual abandonment of the idea of a "ghost in the machine", or the mind-body dualism. At the same time, various dualisms became the subject of a heated scientific and philosophical debate, and people also realised the propensity for dualistic thinking is inborn, together with the human inclination to believe in possessing an immaterial mind.

As Edward Slingerland (2008, 287) observes:

> We will apparently always see meaning in our actions – populating our world with "angry" seas, "welcoming" harbors – and other human beings as unique agents worthy of respect and dignity, and distinct from objects in some way that is hard to explain in the absence of soul-talk, but nonetheless very real for us … we are apparently designed to be irresistibly vulnerable to this illusion – in this respect, Appearance *is* Reality for us human beings.

In *The Wasp Factory*, appearance is reality for Frank: he believes in his impaired masculinity, and in the superior, transcendental powers his mind possesses. Throughout most of the novel, these self-created illusions offer him a possibility of ascribing some order to the cruel, chaotic world which surrounds him. In fact, scientists argue that human cognitive capacities exist not to discover the truth about the world, but to let us survive and adapt to the environment. Of course, people can eventually learn to accept that "ideas, as physical states of matter within our brains, can interact with one another … but there is no superphysical soul or self, outside of the chain of physical causation" (Slingerland 2008, 257). The illusion of the self as spirit, soul, or disembodied mind is, however, as powerful, as it is natural. It equips us with a feeling of uniqueness, power and of having influence over reality. The cognitive, dualist paradox lies in the fact that the illusion of the disembodied mind is inescapably real for the human being, and develops out of his biological capacities (Slingerland 2008, 281).

Paul Kincaid (2013, 35) observes that "because *The Wasp Factory* shows us only one reality, as alienating and disconcerting as that may be, the question of which reality is privileged does not arise". The illusion becomes the truth, both for Frank, and for the reader. At the surprising end of Banks's novel, the protagonist states: "I *am* still me; I *am* the same person, with the same memories and the same deeds done" (1998, 183), even though everything he has believed in was "a lie … a disguise I should have seen through, but in the end did not want to. I was proud; eunuch but unique; a fierce and noble presence in my lands, a crippled warrior, fallen prince" (183). Frank comments upon human existence by stating that "our destination is the same in the end, but our journey – part chosen, part determined – is different for us all, and changes even as we live and grow" (183–184). Hence, Banks notices a paradoxical dualism of human nature: people create and delve into

their own illusions, but at the same time the sheer material existence, with all the forms it takes, has universal features. Who we are is conditioned by biology: it is dependent on what the body, the brain included, experiences. Personal feeling and reasoning is the only means of access to the world: in *The Wasp Factory* Banks implies that it is impossible to escape from the subjective, limited point of view. Banks observes that it might be very troubling to hold a view that all living creatures are just physical systems generated by mindless, purposeless processes, while self-consciousness is just one of numerous illusions which the brain produces. Humans are natural dualists, accepting their biological origins, but nonetheless believing implicitly that they are something more than mere matter. It may be argued that Banks wonders whether a propensity for dualism is what makes us human: and, in fact, the investigation into humanness is a theme that permeates Banks's writings, mainstream and science-fiction alike.

Nowadays, quite the contrary to postmodern relativist philosophy, body and brain are not perceived as blank slates onto which cultural norms, discourses and ideologies are being inscribed. As Slingerland (2008, 15) notes, cognitive science has cast doubt upon the assumption that "humans are fundamentally linguistic-cultural beings, and that our experience of the world is therefore mediated by language and/or culture *all the way down*". We can already prove that there are universal cognitive structures which humans share regardless of their culture. What are, however, these universal traits? What is humanness? Cognitive sciences, together with computer science and animal studies, have incited a potent discussion of what makes a human being. This discussion is not essentialist: it is already common knowledge that a species-specific general "essence" does not exist. Instead, as Donald Brown argued in *Human Universals* (1991), there are features of psyche, behavior or culture which are unique to humans. As Daniel Dennett (1995, 486) added, some of these universals arise directly from the natural cognitive facilities of the human brain, but a huge part we observe are just the best solutions to problems of survival: the so-called "Good Tricks".

Humanness is constantly being defined and redefined anew: for instance, as for the qualities that differentiate humans from other beings, multiple traits once believed to be unique for our species have also been discovered among animals. Morality, sense of self, and culture are no longer phenomena reserved for the human being. Chimpanzees, for instance, have them all: the developments in cognitive science contributed to a deeper understanding that what

we once considered as unique is not even rare. Nevertheless, the cognitive capacity for language, and, hence, for storytelling, tends to be mentioned as a uniquely human trait. We are the only ones who write books about the world, and who transmit knowledge in stories. We can create fictional worlds and fictional characters, which are the reflections of the real. Via language, humans offload knowledge onto the external world, which i.a. allows for technological advancement and socio-cultural life unprecedented in its complexity. As Melissa Hogenboom states in a *BBC* online article on July 6, 2015, "when you pull together our unparalleled language skills, our ability to infer others' mental states and our instinct for cooperation, you have something unprecedented. Us". In other words, humans apply their biological capacities, such as the theory of mind, in order to understand the mental states of others, to integrate experiences into a coherent narrative of our life, to create the sense of self, understand the past, and predict the future. They are capable of storytelling.

In an interview with Colin Hughes published in *The Guardian* on August 7, 1999, Banks stated: "I love plot, I love stories … I don't want any of this post-modern shite, pal. I want a story, with an ending". Thom Nairn claims that an asset of Banks's work is his "fascination with the nature of stories themselves, and how and why they are told" (1993, 134). Banks tends to explore the impact of storytelling, and such is, actually, the case of both *Use of Weapons* and *The Wasp Factory*.

In line with arguments provided by William Flesch (2009, 9), an evolutionary psychologist, "being able to learn through the experiences that others narrate is essential to human adaptation in a highly various and tricky world", while Antonio Damasio (2010, chap. 11), a prominent neuroscientist, adds that storytelling belongs to natural cognitive functions of the brain, enhancing self-consciousness, as well as enabling highly social behavior indispensible for forming the fabric of culture. No longer do we believe that we are unique due to the fact that we possess morality, free will, soul, or self-consciousness. This proves that it is the ability to form narratives that makes us truly human. Flesch (2009, 11) also notes that as listeners or readers we get anxious about the fate of fictional characters as though we were caring about real people. In fact, both *Use of Weapons* and *The Wasp Factory* may be perceived as a conscious play with story-telling functions and goals. In *Use of Weapons*, Zakalwe is depicted in a favourable manner until the last pages of the novel, where the reader learns that he was in fact engaging in the story of the psychopath-

like Elethiomel, who remodeled his memories in order to compile a positive image of himself. In *The Wasp Factory*, Frank glues various (often disconnected) events from his, Angus's and Eric's life, as well as things of mere chance happening on the island, into a concise narrative. Like Zakalwe, Frank creates his own self-serving fiction. Hence, Banks appears also to be intent on accustoming the reader with the power of storytelling: he makes the protagonists' highly improbable narratives absolutely real and plausible, and this is why the truths discovered at each novel's end are so surprising. Since it may be argued that Banks treats literature as an analysis of humanness, while believing that humanness is closely related to the phenomenon of storytelling, it may also be postulated that the Banks presents and treats his characters as real people, subjecting them to the discussion of what it means to be human. Banks is aware of the impact narratives have on the reader's mind: meaning the reader's engagement, and his propensity to forget about the fictional aspect of literature.

The emergence of language, together with the ability to narrate, is closely related with superior social skills that people possess. Due to their biological capacities, humans can accumulate information and transmit knowledge in narratives, which allows for the existence of cultural life unprecedented in its complexity. I think it is crucial to note here that among scientists the nature/culture dualism has becomes invalid, since, as Antonio Damasio (2010, chap. 11) observes, "biology and culture are thoroughly interactive", and culture may be termed as a "biological revolution". What this means, however, is not that all culture's products share a natural origin, but that the emergence and existence of culture itself is capacitated by the powers of human biology. Banks seems to share this view: in his varied and multiple writings, Banks was preoccupied with examining, among other things, how we create consciousness, what makes us human, and what is the subsequent connection between human biology and the emergence of culture. Since this topic is very broad, in this essay I have limited myself to offering a concise outline of, or an introduction to, the discussion of the relationships between cognitive sciences and Banks's literary oeuvre.

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