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The Machine Minds in Iain M. Banks's *Culture* Series

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Abstract. Within the scope of this essay I am analyzing the cognitive similarities between the humans and AIs in Iain M. Banks's chosen *Culture* novels: *Excession*, *Look to Windward*, and *Surface Detail*. In my discussion, I am combining references to cognitive studies with the analysis of Banks's works. I argue that even though the organic and technological minds presented in Banks's writings differ greatly, there are multiple convergences between them. According to the results of my study, these commonalities include: highly developed emotionality, dependency on the shape and functions of the body, extensive use of language, and the propensity for creating narratives. These shared characteristics allow for mutual understanding and peaceful coexistence of different entities within the society of the *Culture*.

Key words: Iain Banks, cognitive studies, AI, cognitive literary theory, mind

1. INTRODUCTION

Iain M. Banks (1954-2013) wrote ten science fiction novels featuring the *Culture* - a loose federation of intelligent, humanoid species inhabiting thousands of galaxies. Lacking any form of organized government, and maintaining all the power in the hands of the super-advanced AIs, the *Culture* is a post-scarcity society, in which everyone can have anything, spend their life in any chosen environment, dwelling, climate, clothes, and even in a chosen body. The *Culture* has solved the problems of mortality, and its citizens are subject to genetic modifications, which eliminate the threat of disease, at the same time making the lives of the inhabitants ultimately more pleasurable.

The AIs of the *Culture* possess almost infinite powers, and are particularly varied. The most powerful of them are called the *Minds*, but the *Culture* is also brimming with helpful, commonplace drones and sentient electronic gadgets. The *Minds* govern various spaces populated by other inhabitants of the *Culture*, such as artificially designed and created *Orbitals*, planets, and great interstellar ships exploring the universe. Each of the mentioned environments is controlled and monitored by a *Mind*, who is fully sentient and

equipped with a distinct personality. The Minds establish contact with the Culture citizens via humanoid or android avatars, as well as through terminals: devices used for sending messages, placing orders or asking questions.

Since the peaceful coexistence as well as a form of mutual understanding of humans and machines present in the Culture is peculiar, I would like to devote this essay to the analysis of the way the Minds' minds are structured, in order to delineate similarities between the way conscious biological organisms and sentient machines think. I shall predominantly focus on the analysis of Iain Banks's *Excession* (1996), supplemented with references to other Culture novels, such as *Look to Windward* (2000) and *Surface Detail* (2010). I will also briefly refer to the "Descendant", a short story included in *The State of the Art* (1991) collection.

Banks's literary output is, in general, permeated by a vivid fascination with the cognitive functions of the brain, and his descriptions of the workings of the mind may be argued go in line with the discoveries made in the field of cognitive studies. Therefore, I will discuss the above-mentioned works in light of an intellectual zeitgeist generated by the late 20th century and early 21st century developments in cognitive sciences. I shall combine references to cognitive studies with the analysis of Banks's writings, as I believe that the application of cross-disciplinary approach may shed new light upon the works discussed - even though I am aware that such transfers (be it within the scope of Banks's novels, or my academic paper) usually require a simplification of scientific concepts.

The plot of Iain M. Banks's *Excession* (1996) follows the Interesting Time Gang (ITG), an informal group of Minds, who are aiming at managing the Culture's response to the Excession of the title - a mysterious black-body sphere which suddenly appears in the Universe, resisting any attempts to probe it. The Minds are profoundly intrigued by the Excession, but so is the Affront, a race known for its cruelty and warmongering tendencies. When the Affront try to intercept Culture warships in order to use them to exploit or subjugate the mysterious object, the ITG instruct one of the starships, a General System Vehicle (GSV) known under the name of the *Sleeper Service*, to head to the Excession's location. The *Sleeper Service* demands in return that the man called Byr Genar-Hofoen meets his ex-lover, Dajeil, on the board of the ship. The humans were once in love, but due to Genar-Hofoen's unfaithfulness, Dajeil left him, finding forty-year long retreat on the *Sleeper Service*. The ship blames itself for this, and seeks reconciliation between the ex-lovers. Meanwhile, the warships stolen by the Affront approach the Excession. In order to stop them, the *Sleeper Service* deploys his own huge remote-controlled fleet. It soon becomes known that the Affront have been manipulated into the attempted siege by the ITG, who intended to use it as an excuse for an open war - since they regarded it as morally requisite to curb the Affront's cruelty. The novel's plot is concerned with the response of the Minds - each possessing distinctive personality - to the Excession itself and to the horrific brutality of the Affront. In fact, not men, but machines serve as the protagonists of Banks's *Excession*. As David Pattie notes, "the humans in *Excession* . . . are subsidiary to the main plot which is played out over their heads by the Minds" (2013, 25). The Minds' role in *Excession* was analyzed by literary critics, such as Yannick Rumpala (2012), who focused on the political organization of a society dominated by artificial intelligences. Rumpala discussed the manner in which sentient machines are integrated into the collective sociopolitical life of the Culture, and Robert Duggan (2012) followed a similar critical path, arguing that *Excession* is a

cornerstone in the development of the Culture's fictional civilization, as it examines spatiality in the political context.

In fact, there is a whole debate concerning politics of the Culture based on the discussion of *Excession* in particular: Chris Brown (2001), Patrick Thaddeus Jackson and James Heilman (2008) analyzed how far the Culture might be regarded as a politically consistent entity, and Farah Mendelsohn (2005) claimed that *Excession* is central to Banks oeuvre, because it is a classic reworking of the space opera genre intent on portraying a politically complex society with the use of the techniques of extrapolative fiction. I would like, however, to leave the political discussion aside, and focus on the character of the Minds themselves, and the particular traits and afflictions they share with the human beings in the context of cognitive facilities.

2. HUMAN AND ARTIFICIAL INTELLIGENCE: DIFFERENCES

Writing about Iain M. Banks' debut novel, *Consider Phlebas*, Gary Westfahl states that it is permeated by a "sense that humanity will never hold its own against superior machine intelligences" (2003, 207). This argument can be ascribed to Culture novels in general, *Excession* included. The discrepancy between the intellectual potential of humans and AIs in the Culture is unimaginably huge, and the ways the machines function are often drastically different from the ways in which the human minds work. Thus, before I proceed with discussing the similarities between the humans and machines, I wish to mention some of the major differences, which constitute an important background for the commonalities shared by two seemingly totally different kinds of sentient beings.

Excession's plot is set thousands of years into the future, at a time when technology has evolved well beyond the reaches of technology we know, therefore each action can be performed by machines in an ultrafast and maximally efficient way. In other words, human intelligence has failed in confrontation with the rapidly developing artificial one. The first advantage the machines have over the organic beings is their data-storing and data-processing capacity. In the Culture, the Minds are capable of gathering, accessing and analyzing gargantuan amounts of information, while the human characters can only refer to the results of these analyses. Iain Banks presents a world where vast amounts of information, including memories, or even brain states, can be materialized and saved in databases. This may be perceived as a facet of the phenomenon which has been taking place since millennia, and which recently significantly accelerated: human propensity to use external media in order to offload memory and other thought processes onto the world. In the late 20th and 21st century, machines such as computers or smartphones have been relieving humans of thinking processes on everyday basis. Of course, people have always been using "the artifactual world of texts, diaries, notebooks, and the like as a means of systematically storing large and often complex bodies of data" (Clark 1998, 201), but the bulk of available data has never been as big as it is now, or as it was at the end of the 20th century. Andy Clark has argued for the existence of something he has called the "007 principle". According to his theory, evolved creatures are reluctant to storing or processing information in costly ways, if it is possible for them to use the environment as a substitute for the information-processing operations (Clark 1989, 64). In other words, humans have always applied intelligence to shape the world in such a

way that they “can be dumb in peace” (Clark 1998, 180). It is an erroneous conviction that individuals should think about everything they do, that they should think more, and more deeply. Philosopher Alfred North Whitehead pointed this out early in the 20th century, stating that “civilization advances by extending the number of operations we can perform without thinking about them” (1958, 55). In other words, technological evolution invariably leads to a state in which humans don’t only do less, but also think less in a world of more and more intelligent objects. In the Culture novels, including *Excession*, Banks admitted that this kind of technological change is imminent, and portrayed his human characters as intellectually passive, or even completely bland and having absolutely no impact on the surrounding reality, ruled and organized by AIs which long ago stopped resembling anything that could be designed by humans. People are no longer engineers, designers, creators or scientists - in the Culture, machines create and upgrade other machines with far greater efficiency, than it could have been performed by any person. Engineering in *Excession* is like an evolutionary process with foresight, guided by superintelligent AIs. At a point in the novel, the reader follows one the sentient drone’s thoughts:

It was no ordinary machine; it was at the cutting edge of its civilisation's technology, designed to evade detection by the most sophisticated instruments, to survive in almost unimaginably hostile conditions, to take on virtually any opponent and to suffer practically any damage in concentric stages of resistance. That its ship, its own manufacturer, the one entity that probably knew it better than it knew itself, was apparently being at this moment corrupted, seduced, taken over, must not affect its judgement or its confidence (Banks 1997, 19).

This sophisticated and independent machine was created by an even more refined and capable ones. Nevertheless, the Culture offers its humans nanotechnological augmentations, the most crucial of which is the neural lace. It is a sort of an implant, which grows with the brain, allowing, among all, for perfect recall, access to an information database, and saving memories, as well as personality traits in a digital form. This wireless brain-computer interface is something that everyone has – *Excession*’s main human character, agent Ulver Seich, had never had any physical alteration “apart from the neural lace of course, but that didn’t count” (Banks 1997, 106). Another character in *Excession*:

[r]esolved to have his neural lace removed for the month of the Festival, deciding that as this year's theme was Primitivism he ought to give up some aspect of his amendments . . . It was oddly liberating to have to ask things or people for information and not know precisely what the time was and where he was located in the habitat. But it also meant that he was forced to rely on his own memory for things like people's names. And how imperfect was the unassisted human memory (he'd forgotten)! (Banks 1997, 187-188).

The hybrid, partially digital neuronal system dramatically outperforms the base, non-augmented brain. One could ask at this point, why are humans not augmented to an extent that would allow them to match the machines in intelligence, subsequently forming a civilization of biological and technological counterparts? The reason for the

intellectual inferiority of human beings is the fact that although human brains have significant plasticity, they are limited by their physical and metabolic constraints. Brains cannot be expanded in size. By contrast, “supercomputers can be warehouse-sized or larger” (Bostrom 2014, chap. 3). As I have already stated, some Culture AIs inhabit gigantic interstellar ships – General Systems Vehicles – together with thousands of drones, humans, aliens, and other biological and non-biological creatures. AIs can also inhabit asteroids, or even whole planets, having immediate control over them, as well as direct access to limitless resources these entities provide.

As John von Neumann noted more than fifty years ago, the biological substrate is extremely slow (1986, 39-50), and “today’s transistors operate on a timescale ten million times shorter than that of biological neurons” (Bostrom 2014, chap. 2). Our capacity for analyzing information and extracting meanings from data is rate-limited, regardless of how big a reservoir we access. This is the reason why we can, for instance, use search machines in digital libraries with millions of academic articles, and do it over the course of seconds – while our own minds would have to grapple with these same things for days on end. In *Excession*, machines are the masters of “innumerable public storage systems, information reservoirs and databases containing schedules, itineraries, lists, plans, catalogues, registers, rosters and agenda” (Banks 1997, 231). “Eighteen fifty-three milliseconds” is long enough for a drone to perform a full systems check, scan the surroundings, review its state and have an insightful monologue (Banks 1997, 57-60). In fact, Banks’s novel abounds in fragments referring to the speed chasm separating machines from human beings. “For a human a month was not that long; for a drone - even one thinking at the shamefully slow speed of light on the skein - it was like a sequence of life sentences”, writes Banks (1997, 93). Machines are fast, therefore their perspective on the external reality varies from the one available to slow-minded humans. Nick Bostrom speculates that “to such a fast mind events in the external world appear to unfold in slow motion . . . Because of this time dilation of the material world, a speed superintelligence would prefer to work with digital objects. It could live in virtual reality and . . . commune mainly with other fast minds rather than bradytelic, molasses-like humans” (Bostrom 2014, chap. 3).

More than twenty years before Bostrom wrote about it, Banks had envisioned an analogous situation in the *Excession*: when the Minds are not preoccupied with running ships, pacifying alien civilization, or governing the Culture, they spend their time in “fantastic virtual realities . . . vanishingly far away from the single limited point that was reality” (1997, 140). “They imagined entirely new universes with altered physical laws, and played with them, lived in them and tinkered with them”, engaging in activities “far beyond the sagacity of the human mind” (Banks 1997, 139). The Minds call it the Irreal, or the Infinite Fun (Banks 1997, 140), which is a place where they could freely and fully apply their speed and intellect.

To sum up: the human and the machine intellectual or data-processing capacities differ greatly. The amount of information AIs can store is virtually unlimited - whereas human long-term memory is weak, its storage capacity small, and the rate at which information is accumulated remains very slow (Bostrom 2014, chap. 2). Brains tire fast, quickly decay, and most of the data remains vulnerable (Kurzweil 2012, chap. 7). It is now, I think, viable to ask why such powerful and intelligent beings as the Minds respect freedom of the vastly inferior humans? Why do they pay heed to the desires and needs of biological creatures? These questions are especially vital if one takes into consideration

the fact that Culture machines often express slightly disdainful attitude towards the intellectually inferior biological beings. One of the drones states that it “never could stand the squidgy great slow lumps” (Banks 1997, 26), while another one postulates that it would never search for truth “inside the minds of mere animals” (Banks 1997, 52). If not contemptuous, machines in the Culture are normally patronizing: for instance, Genar-Hofoen’s animated suit “looked after you perfectly but it couldn’t help constantly reminding you of the fact” (Banks 1997, 31). If the AIs of the Culture differ so greatly, and if humans think slowly, act slowly, behaving like “mere animals”, what makes the Minds tolerate the organic citizens, and even take care of their well-being?

3. HUMAN AND ARTIFICIAL INTELLIGENCE: SIMILARITIES

In fact – in spite of their exquisite computing capacities, the AIs are not like computers, and they often behave human-like – they have individual characters and motivations, and express easily recognizable emotions. Paradoxically, more than any other beings in the Culture, Minds are faced with emotional strain, engaged in interesting ethical dilemmas and difficult intellectual challenges. Besides, they tend to have much more suggestive personalities than people – in *Excession*, for instance, the relationship between two main human protagonists, Dajeil and Byr Genar-Hofoen, appears bland and superficial in comparison to the plots in which the Minds are engaged. The newly recruited Culture’s agent, Ulver Seich, proves to be utterly irrelevant to the novel’s plot, while the narrative itself is concerned mostly with portraying a world in which machines deal with significant issues of which the biological population is blissfully ignorant. When humans “hatch little schemes and plots to their hearts’ content”, these are “practical jokes, petty jealousies, silly misunderstandings and instances of tragically unrequited love”, while the same phenomenon in case of the Minds means that they, for instance, hide from one another the discoveries of whole intergalactic civilizations, or “try to alter the course of a developed culture” (Banks 1997, 66). It is hard not to get the impression that in the Culture humans are superficial, and one possible reason for their existence in the scope of the novel is the fact that the reader would feel too estranged without their presence. I am intent to argue, however, that Banks’s aim in presenting AIs as more human-like and more relatable characters than human beings in *Excession* is more complex: it could be postulated that the human-like characteristics that the Minds possess lead to the consequent sentiment, empathy and respect for humanity and biological life, which in turn leads to the machines taking care of the inferior beings, instead of disposing of them. Such an empathetic attitude is not the case of *Excession* solely, but is clearly visible in other writings associated with the Culture universum. For instance, in the “Descendant” short story published in *The State of the Art* collection, a technologically advanced and sentient spacesuit develops such an emotional attachment to its human owner, that even after the human’s death it is carrying his body around, not willing to dispose of it:

'When did he die?'

'Thirty-four days ago.'

'Why didn't you ditch the body? You'd have been quicker.'

The suit made a shrugging movement. 'Call it sentiment.' (Banks 1991)

In *Look to Windward*, Banks provides a brief, though crucial, account of the history of the development of AIs in the Culture, where he states that “if you were constructing a sentience that was or could easily become much greater than your own, it would not be in your interest to create a being which loathed you and might be likely to set about dreaming up ways to exterminate you” (Banks 2000, chap. 6). For the purposes of this discussion, this is a passage of great importance. Banks explains that the Culture’s AIs “reflect the civilisational demeanour of their source species”, so that there always stays a part of the character of the precursor species in the newly created consciousness (Banks 2000, chap. 6). Subsequently, he mentions instances in the intergalactic history, in which various civilizations attempted at devising AIs with no elements of their own consciousness, their own morality and values. Such sentient entities were known as the perfect AIs, and what characterized them was their almost immediate decision to Sublime, which basically equals ultimately leaving the material dimension (Banks 2000, chap. 6).

It can be argued that what entices the Culture AIs to engage in the matters of biological beings is their emotionality. In fact, I consider the emotionality of the Culture’s machines as the issue that should be addressed in the beginning of the discussion of human-like characteristics of the Culture’s AIs. In all his science-fiction novels, Iain M. Banks is referring to “sentient machines”, and not “artificial intelligences” or “self-aware devices”. “Sentience”, linguistic-wise means an ability to feel and perceive. Of course, the OED’s science fiction citations site contains examples as old as the 1920s in which the meaning of “sentient” is “intelligent”, as opposed to the standard “feeling”. Thus, “machine sentience” has been used as a fixed expression through most of the history of the science fiction genre (Science Fiction Citations for Oxford English Dictionary 2008). In *Look to Windward*, however, Banks describes one of the Culture’s machines in the following way: “the machine was merely clever, not sentient. It would probably not have been able to recognize the emotions behind his words anyway, even if they had been communicated” (Banks 2000, chap. 2). Thus, it may be argued that Banks implies here that the ability to feel and read emotions constitutes the prerequisite for sentience. But, even if the discussion of the rationale behind the use of the term “sentience” is left aside, there is little doubt that Banks’s Culture novels are full of feeling devices, which shall be discussed in a more detailed manner.

Banks’s ideas about the importance of emotionality go in line with the contemporary view on human consciousness, according to which feeling and understanding emotions is regarded as crucial for the construction of self, a building block of consciousness. New research and scientific observations prove that feelings constitute a fundamental substrate for the emergence of awareness. “Before it is cognitive, let alone conscious, thought is primordially an affective and aesthetic phenomenon . . . In other words, feeling is something that happens without, or before, concepts” writes Steven Shaviro, and then adds that “modern philosophy is generally uncomfortable about this prospect” (Shaviro 2016, Introduction), because in most recent philosophical accounts of the mind feeling and emotions play secondary roles (Shaviro 2016, chap. 3). This is definitely not the case of both humans and machines in the Culture novels. First of all, the drones’ emotionality ought to be mentioned: while not anthropomorphic in any way, the drones are built with an aura or field which changes color to reflect their current emotional state. It can, for

instance, be “yellow green with calm friendliness” (Banks 1997, 82), or have “a sort of a muddy cream colour to indicate embarrassment” with “a few flecks of red” to communicate it is hardly acute (Banks 2000, chap. 15). The drones sometimes die with feeling “a mixture of sorrow, elation, and a kind of desperate pride” (Banks 1997, 53).

Banks employs a lot of vocabulary used for describing emotions when he is referring to the AI characters. Just like the drones, the Minds in his novels are very emotional beings. In *Excession*, lengthy descriptions are devoted to the feelings of the Minds who encountered the Out of Context Problem. Some feel outwardly scared (Banks 1997, 104), others are “aware of a continuing undercurrent of fear” (Banks 1997, 244). Nevertheless, all of them know that what they are experiencing are “real emotions”, which one can be “annoyed at, ashamed of and indifferent to” (Banks 1997, 244). *Excession* abounds in references to “angry” or “prideful” AIs, ones that possess “wounded self-esteem” (Banks 1997, 338), while the Sleeper Service’s motivation for bringing Byr and Dajeil back together remains especially poignant. He is the one who permitted their love affair to blossom and, as a result, feels a deep sense of regret when the lovers part, trying desperately to reestablish their relationship:

The woman shook her head. 'I've thought about it. I don't want to see him.'

The avatar stared at Dajeil. 'But I brought him all this way!' it cried. 'Just for you! If you knew...' Its voice trailed off. It brought its feet up onto the front of the seat, and put its arms round its legs, hugging them. (Banks 1997, 335)

The feelings aimed at human citizens of the Culture constitute a substantial part of the AIs emotionality. Banks admits that the Culture would never sacrifice any sentient being while having a possibility of solving a burning issue in a different way. He often mentions the Culture’s bizarrely sentimental attitude to life, and engages on vivid descriptions of ships, such as the Sleeper Service, which construct collections of habitats brimming with living creatures to be cared and catered for. Ships take pride in, and attribute pleasure to, maintaining physical and mental well-being of their inhabitants. They enjoy providing the inferior organic beings “an environment they would each find comfortable, pleasant, stressfree and stimulating”, while it is their duty “to talk to them and empathize with them” (Banks 1997, 351). The AIs consider protecting a “quaint circle of fragile little bodies and the vulnerable little brains” as their obligation, while some Minds admit that they will sacrifice their own lives in order to protect the human beings (Banks 2000, chap. 13).

This all sounds very grave, but the Minds are, in fact, far from being serious and austere creatures: the propensity for play is crucial in the context of the Culture AIs. Nick Bostrom speculates that while play occurs in multiple animal species, humans included, in the case of AIs “the need for playful behavior might become less widespread” (2014, chap. 11), because it will not be useful, as AIs would possess fully developed consciousness and a mature repertoire of skills from the moment of their creation. Still, the Minds are inclined to engage in playful behaviors: in *Excession*, the Sleeper Service uses the people in their Storage suits to construct enormous art- or battle scenes:

When it Stored people it usually did so in small tableaux after the manner of famous paintings, at first, or humorous poses; the Storage suits allowed their occupants to be posed in any way that would have been natural for a human, and it was a simple

matter to add a pigmentation layer to the surface which did such a good job of impersonating skin that a human would have to look very closely indeed to spot the difference. Of course, the ship had always asked the permission of the Storees in question. (Banks 1997, 73)

Banks states that all Minds enjoy play and they value feelings associated with it very highly. The AIs' playfulness does not only have emotional importance, though: in case of the sentient machines it is often associated with their willingness to plot and the weakness for the occasional misdemeanor (Banks 2000, chap. 6). Playfulness contains the element of love for intrigues and plots, as well as the inclination to scheme and to plan, to read out others' intentions, motivations and desires, subsequently getting "people to do things, say things, behave in a certain way, just for the fun of it" (Banks 1991, "A Gift from the Culture").

The prerequisite for this kind playful plotting and manipulative behavior, as well as for understanding and empathy, is possessing a universal Theory of Mind, which allows to comprehend what other beings might be thinking or feeling. In other words, Theory of Mind allows for ascribing various mental states to oneself and other agents in order to interpret their intentions (Tremelin 2006, 75), and it also allows for separation of the *I* from the *you* – hence, the birth of self-awareness. The sentient machines in Banks's *Culture* novels definitely possess a theory of mind, being able to decipher other's intentions and predict their behaviour: for instance, a drone engaged in a conversation, expects the human's sarcastic reply (Banks 1997, 105). The Minds are not only perfectly capable of guessing the thoughts of other Minds, but they also take pleasure in it. In *Surface Detail*, Banks mentions an instance of a powerful warship in a disguise of a less advanced one, who is being followed by another machine. The more advanced entity supposes that its follower "thinks that there isn't the slightest chance" that it can be seen, that is why it is moving so close behind (Banks 2010, chap. 21).

The emotionality of the sentient machines is a thing that they share with the human beings, and so is their attitude towards the body – both their own, and their biological citizens. Even though in Banks's writings the biological substrate is at the very bottom of the evolutionary ladder, because it is slow and "wastefully large" (Banks 1997, 20), it can prove essential:

[w]hen that way [technological] - the relatively easy, quick and simple way - was closed to the inquirer for some reason, usually to do with keeping the inquiry secret, things had to be done the slow way, the messy way, the physical way. Sometimes there was no alternative (Banks 1997, 231).

Neurons constitute a "final-resort back-up" (Banks 1997, 94). Nevertheless, sentient machines possess some quasi-organic parts in their almost completely technological bodies, which proves that they have respect and sentiment towards biological beings. They tend to take advantage "of useful aspects of the human brain's behavior – like its intrinsic pattern recognition, on-target concentration and flinch responses" (Banks 2010, chap. 22).

The *Culture*'s Minds also normally assume the form of an avatar: a human-shaped construct used to interact with humans, which can be realistic enough to fool real humans at close range or even other Mind. Avatars can be also separated from the Mind itself,

becoming autonomous superhumans. Ordinary people also can serve as avatars, if that is what they wish for. The fact that the Minds incorporate the form of a human body, and communicate through it with non-machinic citizens, proves how important it is for them to establish a connection between humans and themselves. It can be argued that the Minds become embodied in order to feel more, to be sentient and conscious in a way that resembles the humans, and to understand humans better thanks to the possibilities offered by direct contact. For instance, the avatar of the Sleeper Service called Amorphia is “a gaunt, pale, androgynous creature, almost skeletally thin and a full head taller than Dajeil” (Banks 1997, 3). Amorphia is behaving in a manner which is relatable and understandable for a human being: it smiles as though uncertain or bows the head in a gesture of greeting. With the descriptions of avatars, Banks emphasizes the fact that the Minds understand the working of the human body and can relate to it. The drones, however, do understand it too: one of the drone characters of *Excession* acknowledges that “if it had been a human, its mouth would have gone dry” (Banks 1997, 125).

As Shaviro puts it, intelligence is heuristic, which means that the mind always operates within some particular material context, regardless of whether it is biological or technological. There is a finitude to cognitive powers: the mind always operates inside a certain body, within the world, and in concert with other entities. It is, therefore, always emotively based, embodied, as well as situational (Shaviro 2016, chap. 3). What is important, is the fact that not only the human-basic brain depends on the human-basic flesh, but the AIs of his novels have their consciousness embedded in and limited by matter, as well. Banks refers to this fact as the Dependency Principle: the Culture’s Minds are also predominantly material and defined by their own substrate and structure. Each drone has a specific physical make-up which corresponds with its personality. In *Look to Windward*, drone Tersono is embodied in a looming one metre-tall piece of metal, which makes it look old, as if it “had been constructed millennia ago”, but actually Tersono is only a few centuries of age (Banks 2000, chap. 1). He just enjoys surrounding himself with old things, and likes the feeling of being in a specific, consciously-chosen body, which allows for interacting with others while being enmeshed in a particular shape. Generally speaking, the bodies of the Culture machines are widely varied and always individualized. The Minds inhabit, for instance, intergalactic ships which serve them as easily modifiable bodies, other machines live in planets or halo-shaped artificially-created worlds called Orbitals. All of these entities provide convenient bodies for a Mind, which is too large, too complex, and too important to be contained within a smaller shell. Most of the Minds choose huge vessels, because they provide them with the capacity for action and physical movement, which is essential, since Minds are conscious beings exhibiting curiosity, emotions, and drives of their own. In “A Few Notes on the Culture”, Banks explains that “Minds bear the same relation to the fabric of the ship as a human brain does to the human body” (Banks 1994). The vessels most commonly described by Banks – and at the same time encountered in the Culture in enormous numbers – are the General Systems Vehicles (GSVs). The GSVs are very fast, inhabited by millions of people and sentient machines, and representing the Culture’s ideals, in which different spheres of consciousness and materiality are interconnected, and the machinic and organic lives stay ceaselessly intermingled. Similarly, in the case of Orbitals, each one “is different” (Banks 2000, chap. 12).

Even though the Minds spend most of their time in Virtual Reality space (nicknamed by them the Land of Infinite Fun), in which they can become so immersed that they

“could forget that there was a base reality at all” (Banks 1997, 130), they still have to rely on their physicality. Becoming too enamored with the virtual can be dangerous for the Minds: while losing contact with the “base reality”, they become vulnerable, weak, and easy to destroy. Banks pinpoints the fact that a Mind is “just like some ancient electricity-powered computer; it didn’t matter how fast, error-free and tireless it was . . . ; if you pulled its plug out, or just hit the Off button, all it became was a lump of matter” (Banks 1997, 131). The Culture’s AIs are dependent on their bodies and rooted in material existence. Their being is “like the dependency of the human-basic brain on the human-basic body” (Banks 1997, 131), states Banks, emphasizing the similarities between biological and technological structures, and the ultimate materiality of all creatures inhabiting the Culture. The Minds are basically matter-based beings with highly developed intellectual capacities. They are embodied, and they understand the importance the body plays for them and for the human citizens.

This sentiment for the material sphere and for maintaining bodily contact is especially visible when the phenomenon of Fleeting is considered:

Fleeting was when two or more ship Minds decided they were fed up being all by themselves and only being able to exchange the equivalent of letters; instead they got together, keeping physically close to each other so that they could converse. (Banks 1997, 198)

Such communication on the part of the AIs is absolutely inefficient and tremendously slow, and serves only to fulfill the need of – literally - staying in touch with other material entities of similar properties.

While the AIs freely change their own bodily shape and the shapes of the human beings, there is one thing ultimately private in the Culture: thought and memory. With these two AIs do not interfere. As Banks put it, “practically the only form of private property the Culture recognized was thought, and memory . . . It was considered the ultimate in bad manners even to think about trying to read somebody else’s – or something else’s – mind” (Banks 1997, 59). Just like for human beings, the contents of the mind are the most valuable aspect of existence, the foundations of self. There are, of course, entities that do not respect this rule of privacy: the ship Grey Area, for example, “did what the other ships both deplored and despised; actually looked into the minds of other people” (Banks 1997, 64). Nicknamed Meatfucker by the other Minds, the Grey Area was an outcast, lacking respect due to its revolting hobby.

Interestingly, the role of language in the Culture is prominent: the Minds use the Culture’s language, Marain, not only to communicate with the citizens, but also to have conversations in their own circle. They are especially fond of creating whimsical names for themselves, such as “I Blame Your Mother”, “Unacceptable Behavior” or “Serious Callers Only”. This attachment to linguistics is something very human: many of the theoretical ruminations on the future of AIs have contained the argument that computers “would never master the subtleties of human language, including metaphors, similes, puns, double entendres, and humor” (Kurzweil 2012, chap. 7), but what Ray Kurzweil suggests is definitely not valid in the case of the Culture’s sentient machines. Communication, however, is not the sole function of language in the Culture: it allows both humans and machines to create and share stories. Narratives are what the Minds value: storytelling is a universal phenomenon, which aims at establishing connections

between all kinds of sentient beings. In *Excession*, one of the Minds admits that what distinguishes each new sentient ship are three things: its own crew, personality, and its own story (Banks 1997, 345). The empathy and care the machines exhibit towards other beings is closely related to the ability to talk with them and the interest in the stories that they are willing to share. A Culture's Mind states:

It was also my duty to get to know those ships, drones and people, to be able to talk to them and empathise with them . . . In such circumstances you rapidly develop, if you don't possess it originally, an interest in – even a fascination with – people. (Banks 1997, 351)

It is, thus, a primordial trait of a sentient machine - its "duty" – to communicate with other beings and, consequently, to engage in an empathetic behavior. The Mind admits that the use of language as well as narrative construction is the first step to develop interest with human beings. Storytelling is something constitutive, both for social life, and for personality, because once you engage in it:

[y]ou have your likes and dislikes; the people you do the polite minimum for and are glad to see the back of, the ones you like and who interest you more than the others, the ones you treasure for years and decades if they remain, or wish could have stayed longer once they've gone and subsequently correspond with regularly. (Banks 1997, 351)

Storytelling and ensuing conversation enhances emotional engagement, allowing for the development of certain feelings and social attitudes. The propensity for storytelling which the Culture's machines exhibit is very useful: it holds fast the whole huge intergalactic society. Retelling the stories of human lives incapacitates establishing close relationships between the AIs: they eagerly "trade tales with other GSVs, other Minds – gossiping, basically – to find out how relationships turned out, whose careers flourished, whose dreams withered" (Banks 1997, 352). This propensity for transferring events and characters into narratives is, in fact, a very basic phenomenon that characterizes the human mind: in the history of humanity storytelling, intertwined with the emergence of consciousness, began to serve as the ultimate solution allowing for transmission of emotions and wisdom (Damasio 2010, chap. 11). Individual consciousness is built on emotions and stories revolving around them: no matter whether these narratives are true stories or fictions, no matter whether they are ours or originally belong to someone else. As Damasio (2010) states, feelings present in stories have survival value for whole societies, since they help individuals enhance their sense of self and cope with the chaos of the surrounding world. (chap. 11).

4. CONCLUSIONS

In Banks's novels, both the organic and non-organic minds function in a narrative mode, which guarantees their mutual understanding, and the Culture's social cohesion. In spite of all the structural variety, and the differences in data-processing capacities, the humans and the AIs share multiple commonalities, such as their inherent emotionality

and dependency on the body, the propensity for linguistic communication and the subsequent ability to organize experience in the form of stories. This study, whose aim was to briefly delineate possible convergences between the workings of biological and artificial minds in the scope of Culture novels, could be further extended by analyzing each aspect of their shared cognitive features in more detail, tracing the chronological development of Banks's ideas in his science fiction novels.

Nevertheless, I believe that via the introduction of cognitive similarities shared by humans and machines, Banks ceaselessly entices the reader to ask what humanness means, and whether being a human has a value in itself. The Culture is shaped as a post-anthropocentric society, in which the subject/object dualism is questioned, as devices commonly possess self-awareness and agency. Banks emphasizes the machines' embodiment, describes their dependence on the environment and their close, emotional relationships with biological subjects in order to blur the biology/technology and nature/culture dualisms. He tirelessly dissolves of the discrepancy between organic and non-organic entities, expressing his monistic, materialist and egalitarian perspective.

REFERENCES

- Banks, Iain. 1991. *The State of the Art*. London: Orbit. EPUB edition.
- Banks, Iain M. 1994. "A Few Notes on the Culture". *Vavatch*. 10 Aug. 1994. Accessed June 14.
- Banks, Iain M. 1997. *Excession*. London: Orbit.
- Banks, Iain M. 2000. *Look to Windward*. London: Orbit. EPUB edition.
- Banks, Iain M. 2010. *Surface Detail*. London: Orbit. EPUB edition.
- Bostrom, Nick. 2014. *Superintelligence: Paths, Dangers, Strategies*. Oxford: Oxford University Press. Kindle edition.
- Brown, Chris. 2001. "'Special Circumstances': Intervention by a Liberal Utopia." *Millenium: Journal of International Studies* 30: 625-633.
- Clark, Andy. 1989. *Microcognition: Philosophy, Cognitive Science and Parallel Distributed Processing*. Cambridge: MIT Press.
- Clark, Andy. 1998. *Being There: Putting Brain, Body, and World Together Again*. Cambridge: MIT Press.
- Damasio, Antonio. 2010. *Self Comes to Mind: Constructing the Conscious Brain*. New York: Pantheon Books. EPUB edition.
- Duggan, Robert. 2012. "Inside the whale and outside: context problems." *Foundation* 116: 6-22.
- Jackson, Patrick T., and James Heilman. 2008. "Outside Context Problems: Liberalism and the Other in the Work of Iain M. Banks." In *New Boundaries in Political Science Fiction*, edited by Donald M. Hassler and Clyde Wilcox, 235-258. Columbia: University of South Carolina Press.
- Kurzweil, Ray. 2012. *How to Create a Mind: The Secret of Human Thought Revealed*. New York: Viking.
- Mendlesohn, Farah. 2005. "The Dialectic of Decadence and Utopia in Iain M. Bank's Culture Novels." *Foundation: The International Journal of Science Fiction* 93: 116 - 124.

- Pattie, David. 2013. "The Lessons of *Lanark*: Iain Banks, Alasdair Gray and the Scottish Political Novel." In *The Transgressive Iain Banks. Essays on a Writer Beyond Borders*, edited by Martyn Colebrook and Katharine Cox, 18-34. Jefferson: McFarland & Company. EPUB version.
- Rumpala, Yannick. 2012. "Artificial intelligences and political organization: An exploration based on the science fiction work of Iain M. Banks." *Technology in Society* 34: 23-32.
- von Neumann, John. 1986. *The Computer and the Brain*. New Haven and London: Yale University Press.
- Science Fiction Citations for Oxford English Dictionary. 2008. "Full record for *sentient* adj." Accessed June 14. <http://www.jessesword.com/sf/view/1430>
- Shaviro, Steven. 2016. *Discognition*. London: Repeater. Kindle edition.
- Tremlin, Todd. 2006. *Minds and Gods: The Cognitive Foundations of Religion*. New York: Oxford University Press.
- Westfahl, Gary. 2003. "Space Opera". In *The Cambridge Companion to Science Fiction*, edited by Edward James and Farah Mendlesohn, 197-208. Cambridge: Cambridge University Press.
- Whitehead, Alfred N. 1958. *An Introduction to Mathematics*. New York: Oxford University Press.

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