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DATES:
Published: 17 December 2020

HOW TO CITE THIS ARTICLE:
Robinson, D., 2020. Vonnegut, Darwin, and the Tragical Satirical Arc of Human History in the Novel Galapagos. KOERS — Bulletin for Christian Scholarship, 85(1). Available at: https://doi.org/10.19108/KOERS.85.1.2491

Vonnegut, Darwin, and the Tragical Satirical Arc of Human History in the Novel *Galapagos*

ABSTRACT

In 1985 Kurt Vonnegut produced a satirical novel entitled Galapagos, in which the author explored a possible earth set one million years in the future. Human beings "have quietly evolved into sleek, furry creatures with flippers, and small brains."[1]

Vonnegut posits a world in which human logic, derived from the functioning of three-kilogramme brains, has resulted in the downfall of the species, prior to the evolution of the seal-like creatures. This article explores the novel from an ecocritical perspective, including references to the work of Greg Garrard, Rachel Carson and Arne Naess. Charles Darwin's work is also considered, because the novel's title and setting allude to his work on evolution.

This article will argue that Vonnegut believes human beings should change their thought and behaviour patterns if we are to have an optimistic future.

In 1985 Kurt Vonnegut wrote a book entitled *Galapagos* (Vonnegut, 1994), in which he posited a world one million years forward in time, in which human beings had evolved into seal-like animals who lived on a small island named Santa Rosalia. These beings lived on a diet of fish and tried to avoid being eaten by sharks and killer whales. They did not possess the big brains of their predecessors. This paper will explore the narrative presented by Vonnegut, and the novel will be considered through an ecocritical lens, making reference to the work of Greg Garrard, Lawrence Buell, Arne Naess and Gaia Vince.

There are two repeated motifs in Vonnegut's novel; one, the big brains that humans possessed in the twentieth century, suggesting the ability to think at a higher level than ordinary animals and, two, economic collapse, as a result of the greed that was evident in human attitudes and behaviour. In the novel this economic collapse was the cause of widespread social disruption and the end of the human species as it existed towards the end of the 20th Century. The critic Gaia Vince makes the point that big brains have provided human beings with agency, which has resulted in them dominating the planet. (Vince, 2014:2) On the matter of brain size, Leonard Mlodinow makes the comment: "Brain sizes vary considerably *among* the individuals of a species, but within a species brain size is *not* directly related to intelligence." (Mlodinow, 2016:15) Mlodinow addresses the development of human beings (*Homo Sapiens*) out of a line of other hominids. He makes the point that the brain of the human ancestor Lucy (*Australopithecus Afarensis*) was a little larger than that of a chimpanzee, but this set the hominid evolution along the path to *Homo Habilis* ('handy' man, a tool maker), and then on to modern humans. He adds: "Today we call our subspecies *Homo Sapiens*, or 'Wise, Wise, Man.' Your own species

1 This quote is from the blurb on the back cover of the Flamingo edition, 1994.

ends up with a name like that when you get to choose it yourself" (Mlodinow, 2016:20). This comment is worthy of Vonnegut himself. However, the big brains do not ensure that humans act in the interests of all living beings on the planet; instead, a sense of self-interest is found in many human decisions.

The main feature of the plot in *Galapagos* that draws all the characters together is the intended voyage named The Nature Cruise of the Century. Ostensibly a voyage to the Galapagos Islands in a sort of homage to Charles Darwin and his discoveries, the voyage is in fact a cynical money-making scheme (Vonnegut, 1994:106). The organisers of the cruise have no inherent interest in the study of nature or its phenomena. Rather, they use nature as a resource to attempt to generate income. Bobby King, who organises the cruise, is only interested in the marketing possibilities in order to make money. In his discussion with Mary Hepburn, one of the passengers, it is apparent that he explores her personal history not because she has value in herself, but because there is the opportunity to use her biography as leverage to generate public interest in the cruise (Vonnegut, 1994:78-81). However, once it is believed that Jackie Onassis will be joining the cruise, King is no longer interested in Mary Hepburn, because the former president's wife is a celebrity whereas Mary is a mere school teacher. Despite the claims about Mrs Onassis intending to join the cruise, this does not in fact happen (Vonnegut, 1994:100).

The ship in the novel, *Bahia de Darwin*, is an allusion to Darwin's travels in the *Beagle*, published in the book *The Voyage of the* Beagle (Darwin, 1987:25-27). Vonnegut specifically refers to Darwin's travels several times and makes reference to the work of the naturalist directly in the name of the twentieth century ship. The ship in *Galapagos* travels haphazardly (Vonnegut, 1994:198) under the command of a captain who does not have any seamanship, and ends up on the most northern of the Galapagos Islands purely by chance (Vonnegut, 1994:208).

By contrast *The Beagle* travels to various places, including the Galapagos Islands, with a sense of purpose. The voyage lasts for five years (Darwin, 1987:vii) and the ship travels around the world, starting in Britain, crossing the Atlantic, stopping at various places in South America, and after crossing the Pacific, in Australia, and thereafter in Mauritius, before returning to Britain. The people on the ship, including Darwin, are engaged in scientific enquiry, which includes observation, comparison and contrast, and categorization.

Vonnegut's novel presents us with a possible human future that is unexpected – who among us would expect that the human species would evolve into seal-like beings with smaller brains than we currently have? In the early 21st Century humans value big brains, because these provide us with the ability to make decisions. Decision-making is part of our much-valued agency. It is through agency that we are empowered to affect our own purposes and destinies. Vonnegut, however, locates human tragedy in the realm of human cognition. Our thoughts, and the choices and actions arising from them, have consequences with regard to our pursuit of wealth and our moral codes.

On the page preceding Part One of the novel, Vonnegut poses this statement:

> *In spite of everything I still believe people are good at heart* (Anne Frank 1929-1945) (Vonnegut, 1994: no page number).

This is a moving statement, knowing, as the reader does, that Anne Frank was the victim of discrimination and finally died because of being categorised as the Other. However, Vonnegut could be using this as a satirical comment; are people really good at heart? The novel he presents to us provides a few characters who act out of good will, but most are either self-centred or ignorant, and unable to make just moral choices. It is also notable that big brains do not necessarily imply an ability to make better moral choices.

Importantly, in the novel there are episodes which fall outside of what we might regard as reasonable expectations. This type of event has an effect on our ability to make choices. An example of this is when Andrew MacIntosh and Zenji Hiroguchi are killed by Geraldo Delgado, who is a paranoid schizophrenic in the military. He has live ammunition and kills them because he is hallucinating (Vonnegut, 1994:122-125). This type of deadly episode is beyond expectation, because big brains tend to accept that other big-brained individuals share a common understanding of reality. Hallucination and its consequences – in this case, death through being shot – are not expected. This is a comment on human fallibility; despite our big brains we do not have an omniscient understanding of our world and our roles in it.

The novel is presented in two parts, and the narrator is an omniscient voice, but initially very little information is provided about the narrator – the reader does not know who the narrator is in terms of the development of the plot. It is in the second part that some of the mystery about the narrator is explained. The narrator is Leon Trout, and he died in a shipyard accident in Malmo, Sweden, where the ship *Bahia de Darwin* was built (Vonnegut, 1994:177). Leon Trout remains with the ship as a ghost and narrates the story. Significantly, his father, the novelist Kilgore Trout, a character who appears in several of Vonnegut's novels (Klinkowitz, 2011:125, Marshall, 2017:138) has died prior to Leon's death. Intermittently Kilgore speaks to Leon, suggesting that he should move on, into the afterlife, but Leon chooses not to do this. It is during one of these exchanges that Kilgore speaks to Leon about humans:

> Need I tell you that this once beautiful and nourishing planet when viewed from the air now resembles the diseased organs of poor Roy Hepburn [Mary Hepburn's deceased husband] when exposed at his autopsy, and that the apparent cancers, growing for the sake of growth alone, and consuming all, are the cities of your beloved human beings (Vonnegut, 1994:204).

This association of human civilization with disease, and the destruction of the planet, is expanded in further statements by Kilgore. It is notable that the negative effects of human actions are seen to corrupt the planet itself – the vast environment spinning in space is presented as diseased and compared to the failed organs of a cadaver. The implication is that, through human action, the planet has been compromised as a place to inhabit. The same human ability to create Mandarax, an advanced piece of technology (Vonnegut, 1994:55) that can translate a thousand languages, has brought catastrophe upon humanity and the planet.

Kilgore also makes the following comment:

> Need I tell you that these animals have made such a botch of things that they can no longer imagine decent lives for their own grandchildren, ever, and will consider it a miracle if there is anything left to eat or enjoy by the year two thousand, now only fourteen years away (Vonnegut, 1994:204).

Although readers in the 21st Century might feel comforted that the idea of total disaster by the year 2000 has been shown to be not true, there is the likelihood that this date is not to be taken as fixed, much as Orwell's *1984* does not refer to a specific date. Instead, the warning applies to some point in the future.

The reference to the future of peoples' grandchildren is a telling one; grandchildren are often regarded as special by the older generation, and they are particularly valued. They carry the genes and the family names forward into the future. However, this group that is so valued is placed in an uncertain future in the novel because of human actions. An additional point is the brevity of time that Kilgore points to – the number of years of good living will not be guaranteed for the next two generations. The urgency is emphasised through the reference to close and vulnerable family members – grandchildren.

Kilgore makes one further observation about humans that has significance:

> Like the people on this accursed ship, my boy, they are led by captains who have no charts or compasses, and who deal from minute to minute with no problem more substantial than how to protect their self-esteem (Vonnegut, 1994:204).

This final comment is a metaphor for human existence; the ship that wanders without purpose, guided by incompetence, is a lesson to all those who trust their leaders. The significance of this issue is very marked, in that because people trusted their leaders, they were led, in a blundering manner, along a tragic arc of history; human beings evolved into another species partly because they followed poor leaders. The self-centredness of the leaders is a significant problem; these people do not lead for others, as a form of service – they lead for themselves.

There is a comment on human actions that are self-centred in Darwin's account of the treatment of the Aboriginal people of Tasmania, previously called Van Diemen's Land. The Aboriginal people were removed from Tasmania and put on an island, so that they could not trouble the colonisers living in Hobart (Darwin, 1987:430). The indigenous people were regarded as thieves and troublemakers. Darwin notes that the gradual decline in numbers of the Aboriginal people, towards extinction, is "partly owing to the introduction of spirits, to European diseases… and to the gradual extinction of the wild animals" (Darwin, 1987:217). Once they were removed to the island, the population numbers of the Aboriginal people fell over a period of time. The existence of the Aboriginal people was compromised to the point of extinction by the actions of big-brained people.

Furthermore, in his travels across the planet Darwin notes many things regarding evolution and the consequences of failing to adapt. In Brazil Darwin describes finding bones which turn out to be fossilised tooth fragments from a mastodon, an extinct species (Darwin, 1987:120). In addition, Darwin comments on the extinction of large numbers of species in North and South America (Darwin, 1987:165). Darwin says that we can speculate, but are unlikely to know the precise cause of extinction (Darwin, 1987:166). In a sense Kilgore Trout is echoing the thinking of Darwin; animal species that fail to adapt will die. As a consequence of following incompetent leaders, the human species is under threat and needs to adapt. With extinction as a possibility, the evolution of humanity into seal-like beings is something which cannot be seen as entirely negative; a more dire alternative is to disappear entirely.

One idea with which Darwin is strongly associated is that of evolution. The novel holds within it overt statements of evolution, in that human beings become something else through adaptation over time, but there are additional elements in the novel that allude to this process of change. For example, the technology of Mandarax, which can translate a thousand languages, is an evolution of the technology of Gokubi, which could only translate ten languages. However, Mandarax is not a practical tool; when asked questions Mandarax tends to respond in quotations from poetry. These quotations are generally of little practical use. The narrator states:

> The uselessness of all its knowledge would so anger the Captain that he threatened to throw it into the ocean (Vonnegut, 1994:56).

The Captain eventually does this, on the last day of his life, at the age of eighty-six (Vonnegut, 1994:56).

Examples of the uselessness of Mandarax's commentary is found in the quote below, which is a response to an observation about the ages of the shipwreck survivors, one of whom has a beard. Notably Mandarax focuses on the beard, which is not the main point, and the response, below, is of no practical use:

There was on Old Man with a beard,
Who said: "It is just as I feared!
Two owls and a hen
Four larks and a wren
Have all built their nests in my beard" (Vonnegut, 1994:215).

This type of commentary is simply a borrowing from Edward Lear and is of no value in providing advice or information about survival on the island. Another example occurs earlier, in which the use of the word Mayday! signalling the need for help, elicits a response about the month of May – a poem written by A. E. Houseman (Vonnegut, 1994:200). Despite the seeming irrelevance of the Edward Lear limerick about birds, there is a tenuous connection to Darwin. In *The Voyage of the Beagle* there is a chapter on birds. Apart from the famous statements about finches, there are also references to other birds, including two owls and a wren (Darwin, 1987:363). Whilst these birds are mentioned by Darwin and by Lear, they are not connected in any other way. Lear used them for rhyming purposes and Darwin was collecting and categorising information for scientific research. The mention of the birds in both texts (and in Vonnegut's novel) is unlikely to be deliberate or indicative of shared purpose.

Another example of evolution is that of the cruise ship, which is originally named the *Bahia de Darwin*. It changes from being a luxury liner to being a ship of refugees, and it changes from this to a wreck. When it is stuck on the reef near the island the survivors re-name the ship *The Walloping Window Blind*, which is from a song Mandarax quotes to Mary Hepburn (Vonnegut, 1994:211). The Kanka-bono girls like the name because of its sound; they do not understand English. The meaning of the name for these girls is not linked to the denotation or connotation of the words – it is linked to the phonological elements. The ship's original name alludes to the theory of evolution and the Galapagos Islands, and the concept is then played out in the changing status of the ship. The word Bahia, from the original name, means "bay", and it makes reference to chapters in Darwin's *The Voyage of the Beagle*, in which an area named Bahia Blanca, in Brazil, is described in detail (Darwin, 1987:11).

In his commentary on Vonnegut's novel the critic Ian Marshall makes the point that Vonnegut acknowledges a debt to Darwin, but also acknowledges Stephen Jay Gould. According to Marshall, the idea of evolution itself has evolved. Whilst Darwin thought of evolution as a slow and gradual process, Gould suggests that at times there might be bigger changes – termed "punctuated equilibrium" – and Akiko is an example of this (Marshall, 2017:138). She changes to a human-like being covered in fur (a change that takes one generation to accomplish) as a consequence of her mother being exposed to the effects of the radiation after the bombing of Hiroshima. This type of mutation is not gradual, suggesting a modification to Darwin's conception of evolution.

The voyage of the *Bahia de Darwin* is an allusion to the voyage of the *Beagle*, but there is another ship alluded to in the novel. Noah's Ark is referred to when it is clear that the Captain is not navigating with any precision. When asked to name any island that is nearby, the incompetent and confused captain says: "Mount Ararat" (Vonnegut, 1994:201). A little later the spirit of Kilgore Trout, in discussion with his son, refers to the people on the ship as animals (Vonnegut, 1994:206). The two references make a link between the ship in Vonnegut's novel and Noah's Ark. However, while the Ark is associated with the purpose(s) of a deity, the ship in Vonnegut's novel is a vessel moving haphazardly – there is no evidence of a higher purpose.

Another connection between Vonnegut's novel and Darwin's work is the number of references to the fauna of the Galapagos Islands. Included in the list are the giant land tortoises (Darwin describes their size, their speed of movement, and the young tortoises falling "prey in great numbers to the carrion-feeding buzzard") (Darwin, 1987:367-369.).

In addition, there are birds, including the blue-footed boobies, who engage in a courtship dance that intrigues some human observers (Vonnegut, 1994:87-89).

The finches, famously recorded by Darwin as having beaks of varying sizes, evolved for different purposes, and are also referenced as being part of Mary Hepburn's classes at school (Vonnegut, 1994:108-110). In her commentary on Darwin's *The Origin of* Species, Janet Browne states that the finches Darwin encountered had "beaks differently adapted to eat insects, cactus, or seeds" (Browne, 2006:41). Darwin became aware that the birds had adapted to specific environments, having "diversified from a common ancestor" (Browne, 2006:41). Earlier in her book Browne comments on the voyage of *The Beagle*, pointing out that in 1835 the ship stopped at the Galapagos islands. "Ironically, Darwin did not notice the diversification of species on the Galapagos islands during the *Beagle's* five-week visit, even though the English official on Charles Island (Isla Santa Maria) informed him that the giant tortoises were island-specific" (Browne, 2006:26). The tortoises, the birds, and the iguanas (to be addressed below) are all categorised within a scientific system that is dependent on big brains for its value.

The iguanas are mentioned in the novel on several occasions. Bobby King, the organiser of the cruise, has a stuffed iguana on his desk. This specific animal might be seen to have no greater purpose than to be an exotic ornament, but it also has a purpose in the novel of being part of King's branding:

> He had made that reptile the totemic animal for the cruise – had caused its image to be painted on either side of the *Bahia de Darwin's* bow, and to appear as a logo in every ad and at the top of every publicity release (Vonnegut, 1994:78).

The use of the iguana image in marketing reflects how natural resources are used for human purposes; in this case the purpose is to make money. Bobby King has no scientific interest in the iguanas, and this differentiates him from Darwin and Darwin's purposes.

Although the iguanas are part of Bobby King's marketing, a different usage for the iguanas is presented when the ship runs aground. The survivors of the wreck beat many of the iguanas to death because they are a source of food (Vonnegut, 1994:209). In this case, when survival is paramount, scientific enquiry is of no consequence; nobody suggests observing the iguanas for purposes of gaining knowledge. In addition, the issue of marketing no longer has any significance. The blue-footed boobies, who were previously of interest because of their courtship dance, also become a source of food after the shipwreck (Vonnegut, 1994:87).

The issue of life, death, and dying is mentioned several times in the novel. In the Swedish shipyard there are accidents in which people die. At the funerals, it is common to say: "Oh, well – he wasn't going to write Beethoven's Ninth Symphony anyway" (Vonnegut, 1994:196).

In other words, the dead person's contribution to humanity was not significant; nothing differentiated the dead person from the great human mass. However, it must be noted that while many humans cannot create great works of art, *somebody* wrote Beethoven's Ninth Symphony. The evolved creatures of the book, with their small brains and flippers cannot compose music or create any form of art. The loss of the big brains has left humans with greater simplicity, but also with a more constrained existence. There is an ironic sense of lost opportunity; despite the big brains, and the implied knowledge and critical ability these hold, human beings have made poor decisions about their own and the planet's future.

I move now to the ecocritical theory of Greg Garrard, whose work is significant in terms of foregrounding the discipline. Garrard presents the reader with several categories of theoretical positioning, and one such position is labelled cornucopia; in essence, the horn of plenty. Garrard points out that this position is one that is anti-environmentalist, in that

it celebrates human ingenuity and the use of resources to improve human standards of living (Garrard, 2012:19). When confronted with arguments regarding the wasteful use of resources, or pollution, the advocates of this position respond that the use of the resources might lead to challenges, but the big brains available for problem solving will be able to provide a solution. Garrard states that they argue: More people on the planet means more resourceful brains, more productive hands, more consumption and therefore more economic growth (Garrard, 2012:19). The logic of the cornucopians is flawed, in that having more brains addressing a problem will not be of value if they are all thinking in the same way.

Garrard's most damning statement regarding cornucopia is probably: Nature is only valued in terms of its usefulness to us (Garrard, 2012:23).

This claim locates the cornucopian group in a situation that addresses the planet simply as a set of resources for human use, or human benefit. In Vonnegut's novel there are several characters who are committed to pursuing the maximising of personal wealth even as the economies of many countries are failing, and society is about to descend into a state of disorder and chaos. For these characters the pursuit of individual or personal benefits is more important than any other aspect of society. They have narrow, limited, interests and act only for themselves.

Garrard acknowledges that, decades prior to his own writing, Rachel Carson addressed the issue of pollution in her text *Silent Spring*, published in 1961. Her concern was about the effects of poison such as DDT on the water supply. She states:

> The most alarming of all man's assaults upon the environment is the contamination of air, earth, rivers, and sea with dangerous and even lethal materials. This pollution is for the most part irrecoverable; the chain of evil it initiates not only in the world that must support life but in living tissues is for the most part irreversible (Carson, 1961:6).

Carson is suggesting that the actions of human beings are leading to damage to the environment which cannot be corrected. This echoes the sentiments of Kilgore Trout, who claims that human beings have destroyed the planet much like a disease. This despite the big brains of the human population.

At a later point in her book Carson makes the following comment, suggesting that humans see nature only as a resource for human purposes:

> The "control of nature" is a phrase conceived in arrogance, born of the Neanderthal age of biology and philosophy, when it was supposed that nature exists for the convenience of man (Carson, 1961:297).

This concern is similar to that of critics of the cornucopian conviction who argue that the environment in which we live should not be treated simply as a resource for business. The consequences of the failure to address environmental damage outlined by Carson are echoed in Vonnegut's novel.

An ecocritical position that is very different from that of cornucopia is the position entitled Deep Ecology. Arne Naess, regarded as the father of the movement, made several observations. His first statement on the basics of the Deep Ecology movement is: "The flourishing of human and nonhuman life on earth has inherent value. The value of nonhuman life-forms is independent of the usefulness of the nonhuman world for human purposes" (Naess, 2008:111). This position contrasts significantly with that of those who support the cornucopian position; for Deep Ecologists the value of the environment is not dependent on its usefulness in terms of human purposes.

Naess also commented on the idea of sustainable development:

> The formidable capacity of our brains makes it easy for us to "see ourselves in others", not only in other human beings but in every living being… Compassion, aided by the brain, encompasses everything capable of pain… Our contemplation of the development of life on earth through countless millions of years, the development of the richness and diversity of life-forms, almost inevitably makes mature, informed human beings adopt a wider perspective (Naess, 2008:296).

For Naess, then, the human brain with its remarkable capacity for thought, is an essential element of the process of problem-solving. This differs from Vonnegut, who sees the big brains as a problem, because they are located in humans who are too self-centred, and too committed to making a profit.

Naess also expressed several ideas about the future. His position, like that of Anne Frank, is optimistic, and he argues that our environment will recover, over a period of many years, like a patient recovering from a disease (Naess, 2008:309). However, this will only be possible if humans change their behaviour. There is no evidence of this happening, or, if it is happening, such a movement is still dwarfed by industry and business.

Lawrence Buell addresses the concept of ecocriticism and points out that it, too, has evolved. Initially a discipline located primarily in the field of writing, it has grown to be an interdisciplinary field, including elements of literature, art, architecture and cinema. Buell comments thus:

> Projects will need to become much more than an Americanist, much more than an Anglophone affair… The planetary scope of the multiple environmental "crises" facing earth and earthlings in the twenty-first century requires a capacity to communicate on a planetary scale, in simultaneous recognition of shared concerns and cultural particularities, for which we are only now starting to generate the requisite vocabularies (Buell, 2011:107).

The concern for planetary action mirrors (unintentionally) the observation of Kilgore Trout about the planet as a diseased place. Although there is a suggestion of a possible happy outcome, Kilgore Trout's words suggest that human beings lack leadership and the ability to make decisions that will lead to a positive ending.

In the late 1980s Vonnegut was asked by the advertising agency of the Volkswagen company to compose a letter to earthlings in 2088AD – one hundred years into the future. He describes this future audience in the following way: "Everybody will sit around all day punching the keys of the computer terminals connected to everybody there is" (Vonnegut, 1992:110-112). This was a remarkably prescient view of the world in 2020. Notably the people are all connected to each other but are frequently not connected to matters beyond themselves. Vonnegut makes an additional point that there are too many people on the planet (Vonnegut, 1992:111).

In addressing the future audience Vonnegut has the following suggestions:

1. Reduce and stabilise your population.
2. Stop poisoning the air, the water, and the topsoil.
3. Teach your kids, and yourselves, too, while you're at it, how to inhabit a small planet without helping to kill it.
4. Stop thinking science can fix anything if you give it a trillion dollars (Vonnegut, 1992:112).

These statements are similar to the claims made by Naess and Carson. The final point is an important one, because it is a refutation of the cornucopian position, which is that answers to environmental challenges can be developed through investment.

Vonnegut makes a final comment about humans in terms of their attitudes to the environment in which they live:

> Aliens in 100 years might find a message from humanity carved on the Grand Canyon wall:
>
> > "We probably could have saved ourselves,
> > But were too damned lazy to try very hard" (Vonnegut, 1992:116).

From the above it is clear that Vonnegut, in typical satirical fashion, presents an image of humanity that lacks fundamental abilities and skills, or has fatal flaws (in this case laziness). It is noteworthy that humanity gains this insight in time to carve the message, but after the opportunity to save themselves. In a sense, then, humanity perishes knowing that it has failed, making its own tragedy evident to the population.

The issue of big brains and human knowledge is addressed by Gaia Vince, who was mentioned some pages earlier. She states:

> Anatomically modern human beings didn't arrive until nearly 200 000 years ago and it was touch and go whether we would survive. But something pulled us through, the something that differentiated us from the other species in this shared biosphere and make us so successful that we now rule over the world: the human brain (Vince, 2014:2).

Vince also points out that human development that is termed "the Great Acceleration" has resulted in this species developing technology that has culminated in planet-changing activities in the shape of deforestation and huge amounts of waste, which have had negative consequences for the planet. At the same time, the nearest relative to humans, the chimpanzees, live much as chimps lived 50 000 years ago (Vince, 2014:3). However, in contrast with this depiction of chimpanzees being possibly benign and involved in their world in a manner that has no negative consequences for the planet, Leonard Mlodinow makes the point that chimpanzees and bonobos have significant muscle strength and sharp teeth which resulted in these species having "savaged their way into their ecological niche" (Mlodinow, 2016:20). This terminology suggests that the close relatives of humans have imposed their presence on an environment, which is a somewhat different view from that of Vince, whose comments about the unchanged manner of life of chimpanzees suggest a situation of balance and stasis.

Vince, writing in the twenty-first century, expresses several opinions about the environment, and she comments about her own visit to the Galapagos Islands. There is significant evidence of invasive species and, although there is an attempt to use science to manage the environment, and reduce invasive species, some people think that this effort will be unsuccessful (Vince, 2014:285-286). The changes have been wrought by human intervention, and they date back decades. Vince points out that Darwin had a five-week stopover in 1835, while travelling on *The Beagle*, "and noticed seventeen introduced species just three years after humans started permanently living on the islands" (Vince, 2014:267). Vince seems to be suggesting that human brains (big though they are) seem unable to address the challenges caused by the consequences of human decisions and actions.

Another commentator on the effects of human interaction on the Galapagos Islands is Martha Honey, who addresses the topic of ecotourism on the islands. The irony of ecotourism is that it is driven by a recognition of the negative effects of human activity on

the environment, but in itself ecotourism is also an economic activity. There are echoes of *The Nature Cruise of the Century* in ecotourism, in that it is an economic activity, but the intention of this process is not a cynical money-making scheme. Honey states:

> Since the 1960s, scientific research, sound park management, well-trained naturalist guides, and a fairly well-regulated and responsible nature tourism industry have helped ensure that the wildlife of the Galapagos has been little disturbed by the steep rise in visitors. But since the late 1980s, the Galapagos Islands have had to cope with a variety of complex problems – new immigrants, introduced species, industrial fishing, unemployment, and conflicts between development interests and park management – that have come in the wake of the ecotourism boom (Honey, 2008:121-122).

In addition, Honey makes the point that the Galapagos authorities are managing the numbers of tourists and tourist operators, in an attempt to support the fragile ecosystem. She provides the following information:

> By the late 1990s and into the New millennium, the islands had eighty to ninety registered yachts, motor cruisers, cruise ships, and day boats. Between 1981 and 2006, the number of tourism boats increased from 40 to 80, and their capacity grew from 597 to 1805 passengers. In 2007, eighty-four tourism boats were registered…: seventy-nine live-aboard boats ("floating hotels") and five day-tour vessels; about 40 percent are locally owned (Honey, 2008:128).

This commentary is interesting from the point of view of categorising and comparison (the number of boats at any time, and the nature of the boats) – it is typical of the manner in which science approaches information, and is a reflection of the reliance on big brains. However, Vonnegut's position is one in which the functioning of human big brains cannot prevent the tragic outcome. Counting boats and tourists, and registering boats, will not stop the environmental catastrophe.

Whilst Garrard and other theorists debate the relative merits of ecocritical theories, Vonnegut has written the future of the human species, in which we are no more than seals. Our big brains have led to this future, in which we have no glory.

However, we must acknowledge that Vonnegut wrote the novel, using his big brain to draw attention to our imitations and the possible dire future. Vonnegut's big brain knew that the readers of *Galapagos* would be people with their own big brains, and possibly they would think and react before it is too late.

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