

A Brief Discussion on the Human Relationship with the Animal: The extreme Inequality  
In the Case of the Cockroach and Possible Ways for Improvement

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In her book “The Posthuman”, Rosi Braidotti analyzes the theories of human-animal relationships proposed by Borges.<sup>1</sup> According to Borges, there are mainly 3 main human-animal relationships.<sup>2</sup> Firstly, animals can be ‘instruments’ of the human survival. Some common roles animals may take in this relationship would be food, medicine and subjects of scientific research.<sup>3</sup> Another relationship proposed by Borges is the ‘companion’ bonding between humans and some animals. Animals are viewed as pets and companions in this relationship.<sup>4</sup> The last proposed human-animal relationship is ‘inspirational’. Animals can be inspirations for human creativity and cultural symbols.<sup>5</sup> Returning to Braidotti, she believes that humans exploit animals in all 3 relationships.<sup>6</sup> Therefore, all 3 human-animal relationships do not realize equality between humans and animals.<sup>7</sup> The relationships make humans believe that they are more superior than other species.<sup>8</sup>

Nevertheless, Braidotti argues that humans should realize that other animals are equally important to the earth, and thus should be respected.<sup>9</sup> She asks humans to perceive themselves as not more superior than other animals, but in equal positions.<sup>10</sup> However, Braidotti seemed to have not considered how her ambitions could be practically achieved in reality. For example, respect may be hard to be given to animals that many of us dislike because negative stereotypes about them are deeply rooted inside us. Such stereotypes can be difficult to remove as it may be based on an animal’s natural behavior.<sup>11</sup> The behaviors are the main factors that make humans believe the animal is different from them.<sup>12</sup> They

1 Rosi Bradotti, *The Posthuman*. (John Wiley & Sons, 2017), 68

2 Bradotti, *The Posthuman*. 68

3 Bradotti, *The Posthuman*. 68

4 Bradotti, *The Posthuman*. 68

5 Bradotti, *The Posthuman*. 68

6 Bradotti, *The Posthuman*. 72

7 Bradotti, *The Posthuman*. 72

8 Bradotti, *The Posthuman*. 68

9 Bradotti, *The Posthuman*. 73

10 Bradotti, *The Posthuman*. 75

11 Markham Heid, " You Asked: Why Are Cockroaches So Terrifying?", *Times*, July 13, 2016.

<https://time.com/4403068/cockroaches-bugs-insects-fear/>

12 Bradotti, *The Posthuman*. 75

make humans alienate this animal in order to boost their sense of superiority as humans.<sup>13</sup> Thus to defy the stereotypes of an animal many humans dislike may require humans to also defy their own perception of the 'more superior human'.<sup>14</sup> This may not be a pleasant experience to some humans.

On the other hand, some may not see the significance of why respect and equality would be needed for certain animals.<sup>15</sup> This may be because these animals are not contributing positively or significantly to the human survival.<sup>16</sup> This may also be because of that the animal perceived as harmful to the wellbeing of humans, or have negative representations in the human culture.<sup>17</sup> Nevertheless, again referring to Braidotti, such animals should still receive basic respect.<sup>18</sup> This is not simply questioning one's morals and respect towards life itself.<sup>19</sup> The discussion is also about reflecting human impacts on the earth and other species, our impact on the planet in the Anthropocene.<sup>20</sup> This may affect the survival of humans in the long run. As Braidotti believes that every species has their role in the ecosystem.<sup>21</sup> Thus any changes of the environment would affect all members of the ecosystem, whom are interconnected inside the system.<sup>22</sup> Not only should we look into how some species are harmed or become endangered in the Anthropocene, we should also look at animals that flourished because of us.<sup>23</sup> The impact humans have done to the world can only be observed as a whole picture when all species are included in the discussion.<sup>24</sup> In addition, as mentioned an animal can inspire cultural creations under the perspective of humans. Some animals may even gain stereotypical 'characters' and become cultural symbols in the human society.<sup>25</sup>

<sup>13</sup> Bradotti, *The Posthuman*. 75

<sup>14</sup> Bradotti, *The Posthuman*. 78

<sup>15</sup> Simon Knutsson. "The Moral Importance of Invertebrates Such as Insects." Doi: <https://doi.org/10.13140/RG.2.1.3025.4805>.

<sup>16</sup> Knutsson. "The Moral Importance of Invertebrates."

<sup>17</sup> Knutsson. "The Moral Importance of Invertebrates."

<sup>18</sup> Bradotti, *The Posthuman*. 75

<sup>19</sup> Knutsson. "The Moral Importance of Invertebrates."

<sup>20</sup> Bradotti, *The Posthuman*. 75

<sup>21</sup> Bradotti, *The Posthuman*. 75

<sup>22</sup> Chris Baraniuk, "The animals thriving in the Anthropocene", *BBC Future*, August 1, 2017. <https://www.bbc.com/future/article/20170801-the-animals-thriving-in-the-anthropocene>

<sup>23</sup> Baraniuk, "The animals thriving in the Anthropocene".

<sup>24</sup> Baraniuk, "The animals thriving in the Anthropocene".

<sup>25</sup> Bradotti, *The Posthuman*. 68

Nevertheless, the animal cultural symbol may influence humans' attitudes and behaviors towards other humans. For example this happens when humans label other humans with the cultural stigma of the animal. The negative labeling of other humans as 'cockroaches' dates back to the Age of Discovery.<sup>26</sup> The American Cockroach was actually an alien species brought to America by slave ships.<sup>27</sup> As a result, when the African slaves arrived America on the dirty ships, locals quickly associated the slaves, the dirt and the cockroach together.<sup>28</sup> The racist labeling of African Americans as 'cockroaches' has lasted till today and has expanded to other ethnic groups in and outside of America.<sup>29</sup>

Another example happens in wartime. With respect to Patterson, 'dehumanizing' other humans, especially the enemy, as animals would "facilitate destruction" of the enemy.<sup>30</sup> For instance, American troops had compared the Japanese to many animals during WWII. The names ranged from "mammals, reptiles and insects", and certainly included "cockroaches".<sup>31</sup> Marjanic suggests that this "vilification campaign" eventually resulted to "a war without mercy", which lead to the final dropping of the atomic bomb in Hiroshima and Nagasaki.<sup>32</sup> The American troops later used similar "hate and racist animal metaphors" to the people of Iraq.<sup>33</sup> There are records saying that that the term "cockroaches" was used to refer to the common people of Iraq who were running for cover.<sup>34</sup>

This situation was portrayed in an episode of the TV series 'Black Mirror'.<sup>35</sup> The soldier in the episode was taught to be proud of his job to exterminate the 'roaches', which are actually common people of the opposing power.<sup>36</sup> The soldier was given a device that

<sup>26</sup> Lindsay Garcia, "American Cockroaches, Racism, and the Ecology of the Slave Ship." *Environment & Society Portal, Arcadia* (Autumn 2017), no. 29. Rachel Carson Center for Environment and Society. doi.org/10.5282/rcc/8048

<sup>27</sup> Garcia, "American Cockroaches, Racism,"

<sup>28</sup> Garcia, "American Cockroaches, Racism,"

<sup>29</sup> Garcia, "American Cockroaches, Racism,"

<sup>30</sup> Suzana Marjanic, Claudia Mettke-Hofmann, and Richard F Preziosi. "Cockroaches: From Belief Narratives to the Contemporary Visual Practice of Catherine Chalmers, or How Cockroaches Have Survived on Earth for More than 320 Million Years". *Folklore: Electronic Journal of Folklore*. 77. 139-158.

<https://doi.org/10.7592/FEJF2019.77.marjanic>.

<sup>31</sup> Marjanic, Mettke-Hofmann, and Preziosi. "Cockroaches: From Belief Narratives"

<sup>32</sup> Marjanic, Mettke-Hofmann, and Preziosi. "Cockroaches: From Belief Narratives"

<sup>33</sup> Marjanic, Mettke-Hofmann, and Preziosi. "Cockroaches: From Belief Narratives"

<sup>34</sup> Marjanic, Mettke-Hofmann, and Preziosi. "Cockroaches: From Belief Narratives"

<sup>35</sup> 大福,"《黑鏡》的「甲由」寓言", *Medium*, September 2, 2019.

<https://medium.com/%E5%A4%A7%E7%A6%8F%E5%88%86%E7%AB%99/%9%BB%91%E9%8F%A1-%E7%9A%84-%E6%9B%B1%E7%94%B4-%E5%AF93%E8%A8%80-7629101d1293>

<sup>36</sup> 大福,"《黑鏡》的「甲由」寓言".

interrupts his perception of the 'roaches', so that he could only see them as monsters but not their real human form.<sup>37</sup> The device was later broken by accident, making the soldier realize that his was killing humans all this time instead of 'monsters'. The soldier was then stuck in his moral struggle to continue on his mission or quit killing the innocent human 'roaches'.<sup>38</sup> The episode was cited by a critic called 大福 in Hong Kong in her article.<sup>39</sup> She believes the police was dehumanizing the protestors by calling them 'cockroaches' in the recent political movement in Hong Kong.<sup>40</sup> The critic believes this labeling facilitates the police to apply violence to the protestors.<sup>41</sup>

Negative labeling of other humans using animals such as the cockroach does not only bond to political and racial discrimination. Research in Australia has discovered that the trend of other road users to label cyclists as 'cockroaches' has caused the overall tendency of these road users to regard cyclists as "not total humans".<sup>42</sup> The researchers suggest that the dehumanizing regard would make the other road users more likely to cause danger to cyclists on the road.<sup>43</sup> Cyclists were also more likely to challenge the other road users that dehumanize them as revenge.<sup>44</sup> This would create a vicious cycle that worsens the relationship between cyclists and other road users.<sup>45</sup> This may lead to more incidents on the road, which may threaten the lives of both parties.<sup>46</sup>

On the other hand, the cockroach was once used as "the symbol of the 1912 -1916 revolution in Mexico".<sup>47</sup> The Mexicans "immortalized" the bug and used it to relate to the poor people who sought revolution to improve their living.<sup>48</sup><sup>49</sup> Whitman claimed that the

37 大福,"《黑鏡》的「甲由」寓言".

38 大福,"《黑鏡》的「甲由」寓言".

39 大福,"《黑鏡》的「甲由」寓言".

40 大福,"《黑鏡》的「甲由」寓言".

41 大福,"《黑鏡》的「甲由」寓言".

42 Jason Goodyer, " More than half of motorists view cyclists as subhuman 'cockroaches'", *Science Focus*, April 9, 2019. <https://www.sciencefocus.com/news/more-than-half-of-motorists-view-cyclists-as-subhuman-cockroaches/>

43 Goodyer, " More than half of motorists view cyclists"

44 Goodyer, " More than half of motorists view cyclists"

45 Goodyer, " More than half of motorists view cyclists"

46 Goodyer, " More than half of motorists view cyclists"

47 Harry III Hurt, "The World's Most Despicable Bug", *Texas Monthly*, June, 1976.

<https://www.texasmonthly.com/articles/the-worlds-most-despicable-bug/>

48 Hurt, "The World's Most Despicable Bug"

49 Jerry Harris, *The Nation in the Global Era: Conflict and Transformation*. (BRILL, 2009). 429.

roach was a “perfect symbol” for the people joining the revolution.<sup>50</sup> The people was said to have certain traits that can relate to the behavior of the roach, such as the nocturnal nature of their activities and their resistance.<sup>51</sup> The spread of the revolution also contributed to the flourish of cockroach populations.<sup>52</sup>

Again using the recent matter of the Hong Kong police labeling the protestors as ‘cockroaches’, the labeling surprisingly encourages some protestors. According to Tam, influenced by the success of a 2000 sitcom ‘War of the Genders’, some Hong Kong people believes the cockroach is one symbol to represent some parts of the Hong Kong spirit.<sup>53</sup> The cockroach is admired for its “spirit of resilience in the face of adversity”.<sup>54</sup> The strong vitality of the bug is also considered as “encouragement” to Hong Kong people of their “right to chase after their dreams”.<sup>55</sup> Thus to some Hong Kong people like Tam, the original negative label of the ‘cockroach’ used by the police to dehumanize the protestors may turn into encouragement instead.<sup>56</sup> It is interesting in how the poor or oppressed would relate themselves to some ‘negative’ stereotypes of the bug. On the surface, this act that seems to look at the animal in a more positive way. However, the promotion of these traits among humans may actually reinforce the negative stereotypes of the insect. And in this process of reinforcing these negative stereotypes of the animal, the tension between the labeller and the labeled may grow.<sup>57</sup> This may further worsens the relationship between these humans.<sup>58</sup> Therefore taking a new perspective to look at the once ignored or disliked animals with respect may challenge both our views of the animal and how we view ourselves and each other as humans.<sup>59</sup> In this essay I would like to look into the case of the cockroach to look into the practical challenges and possible solutions to establish more equal attitudes towards certain animals.

<sup>50</sup> Hurt, "The World's Most Despicable Bug"

<sup>51</sup> Hurt, "The World's Most Despicable Bug"

<sup>52</sup> Hurt, "The World's Most Despicable Bug"

<sup>53</sup> Luisa Tam, " Why Hong Kong police group's use of word 'cockroach' to condemn protestors is both baffling and depressing". *South China Morning Post*, September 9, 2019.

<https://www.scmp.com/news/hong-kong/society/article/3026410/why-hong-kong-police-groups-use-word-cockroach-condemn>

<sup>54</sup> Tam, " Why Hong Kong police group's use of word 'cockroach'".

<sup>55</sup> Tam, " Why Hong Kong police group's use of word 'cockroach'".

<sup>56</sup> Tam, " Why Hong Kong police group's use of word 'cockroach'".

<sup>57</sup> Goodyer, " More than half of motorists view cyclists"

<sup>58</sup> Goodyer, " More than half of motorists view cyclists"

<sup>59</sup> Bradotti, *The Posthuman*. 78

The cockroach is a general term that refers to insects of the order of Blattodea.<sup>60</sup> The family includes around 4800 species.<sup>61</sup> However, only around 1% of all species of Blattodea order are known by many people and have 'pest-like' behaviors.<sup>62</sup> However, many humans have expanded their dislike towards around 30 specific species of cockroaches to the many species of the order in general.<sup>63</sup> Such general negative perception of the animal can be seen consistently in many cultures,<sup>64</sup> which is not common in the animal kingdom. Nevertheless, cockroaches are still an interesting case as they can still play all the 3 roles proposed by Borges. This creates a special situation for this order of animals. This is because humans have very different views to specific species of cockroaches while still having a general dislike for the other species of the same order.<sup>65</sup> In the following I shall explain some aspects of the formation of the stigma of the cockroach. I will also discuss how they create inequality between humans and the cockroach. Specific examples of the unequal relationship would be given on how the cockroach can be regarded as medicine and pets only due to the limited scale and length of the essay. They would help to discuss how the equality between humans and animals that Bradotti is looking for may be difficult to achieve, especially for animals animals that have extreme negative stereotypes like the cockroach.

To start with, the cockroach is known as one of the most feared animals for humans.<sup>66</sup> There are some common stereotypes that contribute to this fear and dislike. As mentioned, one reason can be based on the some of the insect's natural behaviors. According to Lockwood, the cockroach simply process most features that can trigger fear and disgust of humans.<sup>67</sup> Lockwood claims that the animal's "greasy and oily" appearance and distinct odor causes our disgust.<sup>68</sup> The insect's "skittering" behavior and "desire to avoid detection" also raise our fear. One reason for this fear and dislike for this animal because humans

<sup>60</sup> Henry Nicholls, "Cockroaches are not radiation-proof and most are not pests". *BBC Earth*, September 26, 2016. <http://www.bbc.com/earth/story/20160926-cockroaches-are-not-radiation-proof-and-most-are-not-pests>

<sup>61</sup> Nicholls, "Cockroaches are not radiation-proof"

<sup>62</sup> Nicholls, "Cockroaches are not radiation-proof"

<sup>63</sup> Nicholls, "Cockroaches are not radiation-proof"

<sup>64</sup> Marjanic, Mettke-Hofmann, and Preziosi. "Cockroaches: From Belief Narratives"

<sup>65</sup> Marjanic, Mettke-Hofmann, and Preziosi. "Cockroaches: From Belief Narratives"

<sup>66</sup> Rachel Nuwer, "Cockroaches: The insect we're programmed to fear". *BBC Future*, September 18, 2017. <https://www.bbc.com/future/article/20140918-the-reality-about-roaches>

<sup>67</sup> Heid, "You Asked: Why Are Cockroaches"

<sup>68</sup> Nuwer, "Cockroaches: The insect"

cannot control it like other animals.

Another behavior example would be the fact that most cockroach species are natural scavengers. This means the main diet of many cockroaches is wastes and other “decaying organic matter” in the nature.<sup>69</sup> This may range from decaying plants on forest floors to the biological wastes of other animals. According to Beccaloni, research proves that many cockroach species in the nature have important ecological significance.<sup>70</sup> While some species of cockroaches would only feed on green plants, the species that have adapted the urban habitat of humans would eat nearly everything they can find in their surroundings.<sup>71</sup> This extreme wide range of diet may be one of the reasons for humans to think they are ‘disgusting’.<sup>72</sup>

Another reason that makes humans relate some species of cockroaches to ‘dirtiness’ is that some deadly bacterium, such as E Coli, is found to live inside the digestive system of the insect.<sup>73</sup> In fact the bacterium inside a roach have a collaborative relationship with the insect.<sup>74</sup> The roach provides shelter for the bacterium, and the bacterium helps the roach to produce a chemical that the roach need for effective communication with other roaches.<sup>75</sup> Because of this the cockroach is thought to be carriers of diseases.<sup>76</sup> However, in fact there are no historical records of disease outbreaks caused by cockroaches.<sup>77</sup> Some scientists otherwise suggest that because urban cockroach species like habitats that can provide them shady shelter, food and water, they seem to frequently appear in place with poor hygiene.<sup>78</sup> This further correlates these species with the concept of ‘dirtiness’ and ‘disgust’. Thus the scientists suggest that the lack of hygiene of the environment would

<sup>69</sup> Nicholls, "Cockroaches are not radiation-proof"

<sup>70</sup> Nicholls, "Cockroaches are not radiation-proof"

<sup>71</sup> Nicola Twilley, "In Defense of the Cockroach". *The New Yorker*, August 15, 2015.

<https://www.newyorker.com/tech/annals-of-technology/in-defense-of-the-cockroach>

<sup>72</sup> Robin L. Murray and Joseph K. Heumann, "Monstrous Nature: Environment and Horror on the Big Screen." U of Nebraska Press. 24

<sup>73</sup> Christine Dell'Amore, "Cockroach Brains May Hold New Antibiotics?". *National Geographic*, September 11, 2010.

<https://www.nationalgeographic.com/news/2010/9/100909-cockroach-brains-mrsa-ecoli-antibiotics-science-health/>

<sup>74</sup> Elizabeth Pennisi, "Cockroaches communicate via bacteria in their feces". *Science*, December 7, 2015.

<https://www.sciencemag.org/news/2015/12/cockroaches-communicate-bacteria-their-feces>

<sup>75</sup> Pennisi, "Cockroaches communicate via bacteria"

<sup>76</sup> Twilley, "In Defense of the Cockroach"

<sup>77</sup> Twilley, "In Defense of the Cockroach"

<sup>78</sup> Twilley, "In Defense of the Cockroach"



probably contribute to disease infection than the cockroach itself.<sup>79</sup> The existence of the cockroach in the dirty environment in this case becomes the vector for human disgust and misunderstanding. However, it is actually the indicator of health hazards than the real disease carrier. Nonetheless, the negative associations among the insect, health dangers and disgust are already imprinted in many human minds.<sup>80</sup>

This stigma is further extended when the cockroach became inspiration of some horror movies.<sup>81</sup> The background of many horror movies that feature the cockroach is often based on conflicts between human and nature.<sup>82</sup> Humans were experimenting ways to improve quality of life through exploration of science and technology and exploitation of the nature.<sup>83</sup> The scientific attempts finally resulted in chaotic destructions to the nature that finally threatens human survival.<sup>84</sup> The cockroaches in these films were mostly survivors or abandoned experiment samples resulted from failed science attempts such as genetic modification and use of nuclear power.<sup>85</sup> Referring to Murray and Heumann, in the films the cockroaches were thus both “victim” and “survivor”.<sup>86</sup> This however may be similar to the situation of the human survivors in the film, whom may also be victims of the disasters. Under this situation however, the cockroaches become competitors and even predators of humans, which “must be killed for the good of humans”.<sup>87</sup>

The filmmakers thus exaggerate the unfavorable characteristics of urban cockroach species.<sup>88</sup> For example the animal’s favor for dark places makes them vectors for imagination of the hidden desires and death.<sup>89</sup> The films make the cockroaches’ appearances more fearsome and disgusting in the horror films. The creature’s more positive features, like adaptability and fertility are portrayed as dangerous to the living of human characters.<sup>90</sup> As opposites of the humans in the movie, the insect is portrayed as

<sup>79</sup> Twilley, "In Defense of the Cockroach"

<sup>80</sup> Nuwer, "Cockroaches: The insect"

<sup>81</sup> Murray, and Joseph K. Heumann, "Monstrous Nature". 20

<sup>82</sup> Murray, and Joseph K. Heumann, "Monstrous Nature". 21

<sup>83</sup> Murray, and Joseph K. Heumann, "Monstrous Nature". 24

<sup>84</sup> Murray, and Joseph K. Heumann, "Monstrous Nature". 24

<sup>85</sup> Murray, and Joseph K. Heumann, "Monstrous Nature". 26

<sup>86</sup> Murray, and Joseph K. Heumann, "Monstrous Nature". 21

<sup>87</sup> Murray, and Joseph K. Heumann, "Monstrous Nature". 26

<sup>88</sup> Murray, and Joseph K. Heumann, "Monstrous Nature". 22

<sup>89</sup> Murray, and Joseph K. Heumann, "Monstrous Nature". 24

<sup>90</sup> Murray, and Joseph K. Heumann, "Monstrous Nature". 24

lacking humanistic characteristics such as emotions and empathy.<sup>91</sup> The opposition between the cockroach and human in the film is needed as this reflects the core conflicts between humans and the nonhuman nature.<sup>92</sup> And the trait of the cockroach that avoids the control of humans may have depicted how the nonhuman nature resists the control of humans.<sup>93</sup>

The cockroach is therefore not simply a 'survivor' and 'victim' in these film representations. As Sax claimed, "Representations of animals have always contained projections of our deepest hopes, fears and aspirations".<sup>94</sup> As mentioned above, in the case of horror movies that portray the cockroach, the animal is compared to the human survivors more equally in the film. According to Copeland, the long-term appreciation of human survival requires humans to reflect and change the view of their own selves as a species.<sup>95</sup> She believes taking the perspective of the roach and learning from it would help humans become a "successful saviour" like the roach.<sup>96</sup> This view surprisingly echoes to the views of Bradotti who asks for a respectful and equal relationship between species.

Many audiences however refuse to reflect on the use of science and the relationship with nature subtly warned by the horror films. In these horror films, the cockroach represents the nature in opposition to humans.<sup>97</sup> And the deep fear of humans for the 'revenge' of the nature to human exploitation is transferred to the cockroach vector.<sup>98</sup> The fail of human's control over the nature in the films turns into frustration and further hate towards the 'uncontrollable' roach.<sup>99</sup> The representation of cockroaches in horror movies thus makes the insect a vector for expanded hate and fear. Even the more positive traits of the insect, such as the ability to survive high radiation levels, reinforce the 'monstrous' negative stereotypes in people's mind. The negative stigmas of the animal are rooted more concretely while other 'human-like' properties that do not fit into the stigma get little attention.

<sup>91</sup> Murray, and Joseph K. Heumann,. "Monstrous Nature". 23

<sup>92</sup> Murray, and Joseph K. Heumann,. "Monstrous Nature". 24

<sup>93</sup> Nuwer, " Cockroaches: The insect"

<sup>94</sup> Marjanic, Mettke-Hofmann, and Preziosi. "Cockroaches: From Belief Narratives"

<sup>95</sup> Murray, and Joseph K. Heumann,. "Monstrous Nature". 23

<sup>96</sup> Copeland, Marion. *Cockroach*. (Reaktion Books, 2004). 168

<sup>97</sup> Murray, and Joseph K. Heumann,. "Monstrous Nature". 24

<sup>98</sup> Jeffrey Lockwood, "*The Infested Mind: Why Humans Fear, Loathe, and Love Insects*". (OUP USA, 2013). 158

<sup>99</sup> Nuwer, " Cockroaches: The insect"

These stigmas about the animal pass down human generations through learning.<sup>100</sup> As Marjanic observes, cockroaches were represented as pests in children’s books.<sup>101</sup> Quoting from Marjanic, there was an educational article that teaches children to actively kill bugs that were regarded as ‘pests’.<sup>102</sup> The article however teaches children to do so in “considerate” ways that “does not harm the insect”.<sup>103</sup> This teaching eventually created the ‘most feared insect’, which actually does little harm to human survival.<sup>104</sup> In fact, the fear for the cockroach is suggested to be ‘learned’ through traumatic experiences and social teaching.<sup>105</sup>

Eventually, people give up to believe that any good can lie in this animal.<sup>106</sup> For instance, many put the focus on the roach’s ability to survive in Wall-E.<sup>107</sup> The language used in film reviews to describe the presence of the animal is few.<sup>108</sup><sup>109</sup> Some critics may view the appearance of the insect as likeable, yet the deep-rooted stereotypes of the animal may have limited the possible appreciation of the animal.<sup>110</sup> Whitley has a more in-depth analysis on the more positive portrayal of the cockroach in WALL-E. Whitley claims that the cockroach in WALL-E is presented with a less human-like appearance comparing to other prior insect characters in Disney.<sup>111</sup> He believes this is to “honor the animal otherness” of the roach in the film.<sup>112</sup> Both positive and negative traits of the bug are featured in the film. And according to Whitley, the portrayal of the more realistic cockroach may be the best match with the robot protagonists.<sup>113</sup> The cockroach’s high adaptability and un-picky diet made it the best ‘final survivor’ to company the final robot on earth as “outsiders” of the

<sup>100</sup> Nuwer, " Cockroaches: The insect"

<sup>101</sup> Marjanic, Mettke-Hofmann, and Preziosi. "Cockroaches: From Belief Narratives"

<sup>102</sup> Marjanic, Mettke-Hofmann, and Preziosi. "Cockroaches: From Belief Narratives"

<sup>103</sup> Marjanic, Mettke-Hofmann, and Preziosi. "Cockroaches: From Belief Narratives"

<sup>104</sup> Nuwer, " Cockroaches: The insect"

<sup>105</sup> Nuwer, " Cockroaches: The insect"

<sup>106</sup> Marjanic, Mettke-Hofmann, and Preziosi. "Cockroaches: From Belief Narratives"

<sup>107</sup> Kirk Honeycutt. " 'WALL-E': THR's 2008 Review". *The Hollywood Reporter*, June 27, 2017.

<https://www.hollywoodreporter.com/review/wall-e-review-2008-movie-1016979>

<sup>108</sup> Honeycutt. " 'WALL-E'"

<sup>109</sup> Shannen W. Coffin. " WALL-E, No thanks". *National Review*, June 13, 2008.

<https://www.nationalreview.com/corner/wall-e-no-thanks-shannen-w-coffin/>

<sup>110</sup> Honeycutt. " 'WALL-E'"

<sup>111</sup> David Whitley. *The Idea of Nature in Disney Animation: From Snow White to WALL-E*. (Ashgate Publishing, 2012). 149

<sup>112</sup> Whitley. *The Idea of Nature in Disney*. 150.

<sup>113</sup> Whitley. *The Idea of Nature in Disney*. 150.

human society in the film.<sup>114</sup> The film also tried to portray the originally unfavorable traits of the cockroach, such as its ‘sneaky’ nature to hide in any and almost every crack possible.<sup>115</sup> This particular feature “becomes a site of play” as the bug tickles the robots by crawling into the cracks inside their bodies.<sup>116</sup> This parallels the possible frightening and irritating response of the same scene happening on a human body but not the robot, claims Whitley.<sup>117</sup> He believes just because the robot is different from the human body makes it possible for safe imagination for “intimate and responsive interactions” with the negative traits of the cockroach.<sup>118</sup> By this more concrete realization in an imagined post-human setting, humans can think of possible equal relationships and interactions with the feared cockroach in a gentle way.

As we know from the above discussion, both science and the humanities contributed into the development of the stigmatized representation of the cockroach. This resulted extreme fear and hate towards the animal that makes the stigma goes on. Therefore both the science and humanities would have the responsibility to recreate a more positive and respected representation of the cockroach in order to contribute to the building of a more equal and respecting relationship between humans and the cockroach. The example of WALL-E would be a solid example of construction of a more positive and respected representation of the cockroach.

A way to head for a more positive relationship between the human and the cockroach maybe showing people the ‘value’ of the cockroach in the eyes of human.<sup>119</sup> However, the stigma may negatively affect how we perceive possible relationships with the cockroach.

For instance the cockroach has long histories as medical materials in various cultures. For example, in Chinese medicine, the cockroach is said to be able to treat issues such as chronic stomach pain.<sup>120</sup> There are huge breeding facilities in China to breed cockroaches solely for the making medicine.<sup>121</sup> The largest cockroach farm in China has created “4.3

<sup>114</sup> Whitley. *The Idea of Nature in Disney*. 150

<sup>115</sup> Whitley. *The Idea of Nature in Disney*. 150

<sup>116</sup> Whitley. *The Idea of Nature in Disney*. 150

<sup>117</sup> Whitley. *The Idea of Nature in Disney*. 150

<sup>118</sup> Whitley. *The Idea of Nature in Disney*. 150

<sup>119</sup> Marjanic, Mettke-Hofmann, and Preziosi. “Cockroaches: From Belief Narratives”

<sup>120</sup> Stephen Chen. "A giant indoor farm in China is breeding 6 billion cockroaches a year. Here's why". *South China Morning Post*, April 19, 2018.

<sup>121</sup> Chen. "A giant indoor farm in China."

billion yuan in revenue over the years”.<sup>122</sup> The potions of the farm are made totally on crushed cockroaches. <sup>123</sup>Citing from an official report, the portion “has cured over 4 million patients”.<sup>124</sup> However, the manufacturers tried to hide this fact in the medicine package. Because they believe patients may refuse to buy the medicine if they know that it is made of ‘disgusting’ cockroaches.<sup>125</sup> This may be the case for some patients who later discovered the use of cockroaches in their medicine.<sup>126</sup> However, some doctors claim that there are other patients that consume the potion in long term even they have knowledge of what it is made of.<sup>127</sup>

From the example we may conclude that knowing the instrumental benefits of cockroaches does not seem to change the image of the ‘disgusting’ animal, even though breeders guarantee that the roaches are clean for consumption. It appears that the cockroach may be only functional to some humans as medicine when they do not know about the existence of the bug in the medicine.<sup>128</sup> Nonetheless, many patients still recognize the benefits of the cockroach as medicine.<sup>129</sup> Research related to cockroach farming is also proved to be assisting technological advancement.<sup>130</sup> However, this does not change the attitude of humans towards the animal. The doctors and manufacturers of the potion still regard the roach as “disgusting”.<sup>131</sup> And the production of the potion may be unethical and ignoring the rights of the insect. According to Knutsson, unavoidable killing of the insect should be based on a principal to minimize the possible unnecessary suffering of the animal.<sup>132</sup> Therefore, crushing a cockroach alive to produce the potion may be regarded as causing unnecessary pain and suffering to it. The production may be unethical in this sense. Therefore, recognition of the instrumental value of the insect does not stop unethical human exploitation of the insect for economic benefits. Thus in either ways the instrumental role of the cockroach does not win respect from humans. And with respect to

<sup>122</sup> Chen. "A giant indoor farm in China"

<sup>123</sup> Chen. "A giant indoor farm in China"

<sup>124</sup> Chen. "A giant indoor farm in China"

<sup>125</sup> Chen. "A giant indoor farm in China"

<sup>126</sup> Chen. "A giant indoor farm in China"

<sup>127</sup> Chen. "A giant indoor farm in China"

<sup>128</sup> Chen. "A giant indoor farm in China"

<sup>129</sup> Chen. "A giant indoor farm in China"

<sup>130</sup> Chen. "A giant indoor farm in China"

<sup>131</sup> Chen. "A giant indoor farm in China"

<sup>132</sup> Knutsson. "The Moral Importance of Invertebrates."

Braidotti, this again proved the instrumental role of the animal cannot achieve equal human-animal relationships.<sup>133</sup>

Another role for a cockroach is to be a pet. The promotion of hissing cockroaches as proper pets also may help create a different image of cockroaches.<sup>134</sup> Nevertheless, according to Braidotti, the relationship between pets and people is based on the exploitation of the animal.<sup>135</sup> In the case of the hissing cockroach, humans gain control of the insect through the companion relationship between the two species.<sup>136</sup> Humans can finally 'control' the once 'uncontrollable' cockroach and gain a sense of superiority on the animal. One proof for this hope for control over the species is that there are detailed manuals on how to keep pet cockroaches properly.<sup>137</sup>

Nevertheless, even though the Madagascar Hissing Cockroaches become more popular pets nowadays, the reputation of cockroaches in general has not improved. For instance, the manual for keeping hissing cockroaches clearly indicates that hissing cockroaches are different from other species of cockroaches that can be found in urban settings.<sup>138</sup> For example, the owner is not recommended to feed hissing cockroaches other types of food besides green plants or vegetables.<sup>139</sup> This is because hissing cockroaches have different diets from other urban cockroach species. They do not have to ability to eat wide ranges of food and are only adapted to consume plants.<sup>140</sup> This is clear evidence that developing companion relationships with specific species of cockroaches further encourages speciesism among species of the order of Blattodea.<sup>141</sup> Humans are encouraged to realize the difference among different species of cockroaches and treat them with different attitudes. Thus not only this may worsen the negative attitudes of humans towards other species of cockroaches, the exploitation extends to specific species such as the Madagascar

<sup>133</sup> Bradotti, *The Posthuman*. 72

<sup>134</sup> Marjanic, Mettke-Hofmann, and Preziosi. "Cockroaches: From Belief Narratives"

<sup>135</sup> Bradotti, *The Posthuman*. 72

<sup>136</sup> Bradotti, *The Posthuman*. 72

<sup>137</sup> Mulder, Phil, and Shufan, Andrine. "Madagascar Hissing Cockroaches: Information and Care". *OSU Extension*, March, 2017. <https://extension.okstate.edu/fact-sheets/madagascar-hissing-cockroaches-information-and-care.html>

<sup>138</sup> Mulder, et al. "Madagascar Hissing Cockroaches".

<sup>139</sup> Mulder, et al. "Madagascar Hissing Cockroaches".

<sup>140</sup> Mulder, et al. "Madagascar Hissing Cockroaches".

<sup>141</sup> Marjanic, Mettke-Hofmann, and Preziosi. "Cockroaches: From Belief Narratives"

hissing cockroach in the form of a companion relationship.<sup>142</sup> Thus even though the attempt to improve the image of the roach may be a step forward to respect and equality, the pet-owner relationship cannot achieve equality between humans and the bug.

The hope of Braidotti to achieve equal relationships between the animal and humans seems to be failing in the case of the cockroach. The negative stereotypes of urban roaches may be too deep rooted in humans. And they disrupt other possible equal relationships that can be built between humans and the cockroach. Both parties are victims of the negative cultural constructions of the roach.

Nevertheless, respect and equality for this animal does not mean that we had to force ourselves to befriend this subject of fear. Even though we cannot put down our deep-rooted stereotypes easily, we can still show minimum respect for a basic right and respect for a cockroach's life.<sup>143</sup>

Some may justify the killing of insects by saying that killing insects is showing empathy to the animal to end its life of misery.<sup>144</sup> To some the life of the insect may generally seem short yet difficult.<sup>145</sup> The world seems to contain various deadly dangers for an insect.<sup>146</sup> Humans may be one of the most dangerous creatures in the current environment that threatens the living of insects.<sup>147</sup> Humans created numerous ways to kill insects, and many may have a general dislike for many species of insects due to cultural influences.<sup>148</sup> This is well demonstrated in our example of the cockroach, which is one of the most hated insects in the human view.<sup>149</sup> Therefore, to some the insect life seems to be shadowed by a lot of danger and hatred from the surroundings.<sup>150</sup> And killing an insect would be granting it mercy to end this miserable life.<sup>151</sup> However, the idea of 'granting mercy' to an animal already reflects a sense of human superiority towards the animal.<sup>152</sup> Thus the measure

<sup>142</sup> Marjanic, Mettke-Hofmann, and Preziosi. "Cockroaches: From Belief Narratives"

<sup>143</sup> Knutsson. "The Moral Importance of Invertebrates."

<sup>144</sup> Alice Oven. "Humane Insecticides: Why Bother?". *Nature ethics*, August 21, 2018. <https://www.natureethics.org/words/humane-insecticides>

<sup>145</sup> Oven. "Humane Insecticides"

<sup>146</sup> Oven. "Humane Insecticides"

<sup>147</sup> Oven. "Humane Insecticides"

<sup>148</sup> Oven. "Humane Insecticides"

<sup>149</sup> Nuwer, "Cockroaches: The insect"

<sup>150</sup> Oven. "Humane Insecticides"

<sup>151</sup> Oven. "Humane Insecticides"

<sup>152</sup> Bradotti, *The Posthuman*. 75

sure is not achieving the respectful and equal relationship that Bradotti seeks.

Moreover, animal right advocates believe that this thought is unethical.<sup>153</sup> This is because we cannot totally understand the world of insects as humans. Humans should not regard their own perception of the insect life as the experience of the insect.<sup>154</sup> Although the life of the insect may be short, the insect may still perceive it as valuable for its own reasons.<sup>155</sup> There are studies that reflect that insects have the capability for pain and conscious thinking.<sup>156</sup> They also have mental abilities such as emotions and affection for each other. For the cockroach, it is found to have consciousness, affection for other cockroaches and individual personalities.<sup>157</sup><sup>158</sup><sup>159</sup> Therefore, the life of the insect should still be respected.<sup>160</sup> Unnecessary killing of insects should be avoided.<sup>161</sup> If killing is necessary in cases such as pest control, it should be done in a humane manner to minimize suffering of the insect concerned.<sup>162</sup>

Humane ways to kill the insect to reduce the pain the insect would experience when killed.<sup>163</sup> The use of more humane pesticides can greatly avoid the pain the insect experience during the kill.<sup>164</sup> The problem of usage of pesticides concerns mainly pests, especially agricultural pests. However, the cockroach is still regarded as one of the most disliked and common pests in eyes of humans.<sup>165</sup> Thus this discussion is still related to our subject of concern.

The most ethical way to avoid insects is still the change of behavior.<sup>166</sup> For example,

<sup>153</sup> Oven. "Humane Insecticides"

<sup>154</sup> Oven. "Humane Insecticides"

<sup>155</sup> Oven. "Humane Insecticides"

<sup>156</sup> Paula Moore. "Practice Radical Compassion: Be Kind to Cockroaches". People for the Ethical Treatment of Animals, April 20, 2015. <https://www.peta.org/blog/practice-radical-compassion-be-kind-to-cockroaches/>

<sup>157</sup> Douglas Fox. "Consciousness in a Cockroach". *Discover*, January 10, 2007.

<https://www.discovermagazine.com/mind/consciousness-in-a-cockroach>

<sup>158</sup> Christina R. Stanley, Claudia Mettke-Hofmann, and Richard F. Preziosi. "Personality in the cockroach *Diploptera punctata*: Evidence for stability across developmental stages despite age effects on boldness". *Food Research International PLOS ONE* 12(5): e0176564. <https://doi.org/10.1371/journal.pone.0176564>

<sup>159</sup> Kenneth Chang, and John Schwartz. "Cockroaches Respond to Peer Pressure, Study Suggests". *The New York Times*, November 15, 2007. <https://www.nytimes.com/2007/11/15/science/15cnd-roach.html>

<sup>160</sup> Moore. "Practice Radical Compassion"

<sup>161</sup> Moore. "Practice Radical Compassion"

<sup>162</sup> Oven. "Humane Insecticides"

<sup>163</sup> Raphael Didham, Simon Leather, & Yves Basset. 2019. Ethics in entomology. Doi: <https://doi.org/10.1111/2041->

<sup>164</sup> Oven. "Humane Insecticides"

<sup>165</sup> Hurt, "The World's Most Despicable Bug"

<sup>166</sup> Oven. "Humane Insecticides"



keeping the living environments clean to avoid possible settlement of cockroaches.<sup>167</sup> In fact research suggests that cockroaches have characteristics that make them less suitable to live in clean environments.<sup>168</sup> For example, the roach is found to prefer dark shady places and are afraid of the light and bright conditions.<sup>169</sup> They also cannot survive well in very hygiene environments. Because as mentioned cockroaches need bacteria in the environment for effective communication among their group.<sup>170</sup> In addition, some research reflects that cockroaches can still be found in shady environments in even clean malls and restaurants, like the drainage and air conditioning systems.<sup>171</sup> We cannot totally avoid encounters with the animal. However, to reduce the chances of direct contact, keeping the environment hygiene and taking away food sources would be enough to keep cockroaches out of sight.

On the other hand, in science research, collection of physical samples is needed for proper further research of a species.<sup>172</sup> Proper study of a species would be necessary for humans to understand thoroughly how we can preserve them with best efforts.<sup>173</sup> Thus the killing of insects, including the cockroach cannot be totally avoided.<sup>174</sup> Nevertheless, the discipline of entomology has clear guidelines for the discipline to collect insects in an ethical way. The ethics of the discipline emphasis that collection and experimentation on insects should minimize the suffer of the subject(s).<sup>175</sup> The subject(s) should experience minimum suffer physically and mentally possible in collection and experiments.<sup>176</sup> Voluntary killing of the subject should also be avoided.<sup>177</sup> As mentioned above, this is because there are research that shows that insects have the capability for pain, consciousness and other mental abilities.<sup>178</sup> Although some research suggest that some

<sup>167</sup> Oven. "Humane Insecticides"

<sup>168</sup> Oven. "Humane Insecticides"

<sup>169</sup> William J. Bell, Louis M. Roth, and Christine A. Nalepa, *Cockroaches: Ecology, Behavior, and Natural History*. (JHU Press, 2007). 59.

<sup>170</sup> Pennisi, "Cockroaches communicate via bacteria"

<sup>171</sup> Mark Sharp. "Cockroaches: everything you never wanted to know." *South China Morning Post*, April 22, 2015. <https://www.scmp.com/lifestyle/article/1773251/cockroaches-everything-you-never-wanted-know>

<sup>172</sup> Didham, Leather, & Basset. Ethics in entomology.

<sup>173</sup> Didham, Leather, & Basset. Ethics in entomology.

<sup>174</sup> Didham, Leather, & Basset. Ethics in entomology.

<sup>175</sup> Didham, Leather, & Basset. Ethics in entomology.

<sup>176</sup> Didham, Leather, & Basset. Ethics in entomology.

<sup>177</sup> Didham, Leather, & Basset. Ethics in entomology.

<sup>178</sup> Didham, Leather, & Basset. Ethics in entomology.

insects may not experience pain when its limbs were detached.<sup>179</sup> However, the discipline still suggests that no unnecessary harm should be inflicted to subject insects during experiments.<sup>180</sup> This is because we cannot totally understand the insect experience of the world and cannot compare its feelings of pain and suffer to ours as vertebrates.<sup>181</sup>

In addition, the collection of insect specimens is required by the ethics code to be limited to minimize the effect to the population of the species. The researcher is also required to be responsible for the wellbeing of the collected living specimens.<sup>182</sup>

Besides the mentioned responsibilities, the researcher is also required to handle the release of the insect responsibly if release is needed.<sup>183</sup> The researcher is required to transfer the healthy insect to the exact spot where it was collected.<sup>184</sup> The insect should not be released to other places because it may not be able to survive the novel habitat.<sup>185</sup> The released insect(s) may also become an alien species to the novel habitat and affect the wellbeing of other species in the habitat.<sup>186</sup> Releasing the specimen back to its original habitat therefore would be the most ethical and responsible decision to the specimen itself and to other species.<sup>187</sup>

Thus although killing and keeping of specimens is unavoidable for scientific research, such act should not be accused as 'inhumane' if the act has thoroughly followed the code of ethics of this field. Because the act has considered the wellbeing of the individual insect(s) and the sustainable development of the insect population in a responsible way. The collection has also considered the impact on other species and the environment. As mentioned above, scientific study is unavoidable for the improvement of preservation of species.<sup>188</sup> Thus the instrumental relationship between humans and the insect is not equal in the eyes of Braidotti.<sup>189</sup> However, research is still needed to help humans learn more

<sup>179</sup> Jeffrey Lockwood. 1988. "Not to Harm a Fly: Our Ethical Obligations to Insects," *Between the Species*: Vol. 4: Iss. 3, Article 12. Doi: <https://doi.org/10.15368/bts.1988v4n3.10>

<sup>180</sup> Lockwood. "Not to Harm a Fly"

<sup>181</sup> Lockwood. "Not to Harm a Fly"

<sup>182</sup> Didham, Leather, & Basset. Ethics in entomology.

<sup>183</sup> Didham, Leather, & Basset. Ethics in entomology.

<sup>184</sup> Didham, Leather, & Basset. Ethics in entomology.

<sup>185</sup> Didham, Leather, & Basset. Ethics in entomology.

<sup>186</sup> Didham, Leather, & Basset. Ethics in entomology.

<sup>187</sup> Didham, Leather, & Basset. Ethics in entomology.

<sup>188</sup> Didham, Leather, & Basset. Ethics in entomology.

<sup>189</sup> Bradotti, *The Posthuman*. 72

about other species and improve the relationship with animals. The way to possibly make the human-insect relationship more equal by this stage can be more concrete realization of the code of ethics in the entomology field and do our best efforts to minimize harm inflicted on the animal.

In addition, proper attitudes and ethics should be educated and promoted to the next generation. This helps to maintain the code of ethics in the field and build the basis for future establishments of possible equal and respectful relationships between humans and the cockroach. For instance the appeal of the education experiment done by Backyard Brains is not encouraged. Backyard Brains is an organization that aims to promote the study of neuroscience.<sup>190</sup> In its controversial experiment, the scientists instruct young students to attach a device onto the back of a cockroach with glue.<sup>191</sup> The antennae of the insect were cut and small electrodes were replaced in the antennae's place.<sup>192</sup> After the 'operation', the children can control the movement of their 'Roboroach' with their smart phones.<sup>193</sup>

The program is viewed as unethical for 3 main reasons. Firstly, the anesthetic treatment to the cockroaches before the 'operation' simply involves putting the cockroaches in cold water.<sup>194</sup> Thus the insects may experience unnecessary pain during the 'operation'. Moreover, the treatment of the roaches during the program is questionable. Although Backyard Brains claim that each bug would be taken away for rest from time to time during the program, the tiredness and damage of the cockroaches experienced cannot be known.<sup>195</sup> It is also unknown that weather the cockroaches were given enough time to recover from the 'operation'. Last but not least, the treatment and fate of the bugs after the event was in doubt.<sup>196</sup> The organizers of the event simply claim that the roaches will 'retire'

<sup>190</sup> "Ethical Issues Regarding the Use of Invertebrates in Education". Backyard Brains. Accessed March 28, 2020. <https://backyardbrains.com/about/ethics>

<sup>191</sup> David Harding, "RoboRoach backpack lets users control insects, called 'cruel' to animals". *New York Daily News.*, November 10, 2013.

<https://www.nydailynews.com/news/national/roboroach-backpack-lets-users-control-cockroaches-article-1.1512243>

<sup>192</sup> Harding, "RoboRoach backpack lets users control insects"

<sup>193</sup> Harding, "RoboRoach backpack lets users control insects".

<sup>194</sup> Harding, "RoboRoach backpack lets users control insects".

<sup>195</sup> Liat Clark. " In defence of the cockroach: RoboRoach Kickstarter ignores ethics". *Wired*, June 10, 2013.

<https://www.wired.co.uk/article/roboroach-kickstarter>

<sup>196</sup> Clark. " In defence of the cockroach: RoboRoach Kickstarter ignores ethics".

after the program.<sup>197</sup> The impact on the health and wellbeing of the animals caused by the project is not disclosed. However, Backyard Brains claims that their project is ethical because the benefit it brings to the society outweighs the cost to the animals.<sup>198</sup> The organizers also claimed that they would take responsible care of the cockroaches after the event and that the damage to the body of the insects are recoverable.<sup>199</sup> The organizers believe that the experiment would be fun and could raise the students' interest to study in science.<sup>200</sup> The program was also expected to be successful in teaching students knowledge of neuroscience.<sup>201</sup> The program however, was accused by the media and some parents as "unethical" and are "teaching children to be psychopaths".<sup>202</sup><sup>203</sup> This case thus shows the responsibility of strict realization and proper education of animal ethics in the science sector. On the other hand, the case also shows that some humans would care about the welfare of cockroaches.<sup>204</sup> This may indicate hope for possibilities of a more equal and respectful relationship between the human and the cockroach.

In conclusion, the stigma of the cockroach has resulted the unequal relationship between humans and the insect. The stigma continues with time, eliminating possible constructions of more equal relationships. Both science and the humanities are responsible in the construction of the stigma of an animal. Thus both have the responsibility to help recreate the image of the animal. Therefore to add on Braidotti's argument, one practical and respectful way to reconstruct a more equal relationship between humans and animals would be clarifying the misunderstandings about animals. The attempt for other possible relationships with the cockroach such as the instrumental and companion relationships do not seem to help establish equal and respectful relationships between humans and the cockroach. Thus besides recreating the image of the roach, active realization and awareness of ethics when facing a cockroach would be a step to achieve a more equal and respectful relationship between the 2 species.

<sup>197</sup> Clark. " In defence of the cockroach: RoboRoach Kickstarter ignores ethics".

<sup>198</sup> "Ethical Issues Regarding the Use of Invertebrates in Education". Backyard Brains.

<sup>199</sup> "Ethical Issues Regarding the Use of Invertebrates in Education". Backyard Brains.

<sup>200</sup> "Ethical Issues Regarding the Use of Invertebrates in Education". Backyard Brains.

<sup>201</sup> "Ethical Issues Regarding the Use of Invertebrates in Education". Backyard Brains.

<sup>202</sup> Clark. " In defence of the cockroach: RoboRoach Kickstarter ignores ethics".

<sup>203</sup> Harding, "RoboRoach backpack lets users control insects"

<sup>204</sup> Clark. " In defence of the cockroach: RoboRoach Kickstarter ignores ethics".

## Bibliography

- Baraniuk, Chris. 2017. "The animals thriving in the Anthropocene". *BBC Future*, August 1, 2017.  
<https://www.bbc.com/future/article/20170801-the-animals-thriving-in-the-anthropocene>
- Bell, William J., Roth, Louis M., and Nalepa, Christine A. 2007. *Cockroaches: Ecology, Behavior, and Natural History*. JHU Press.
- Bradotti, Rosi. 2013. *The Posthuman*. John Wiley & Sons.
- Chang, Kenneth, and Schwartz, John. 2007. "Cockroaches Respond to Peer Pressure, Study Suggests". *The New York Times*, November 15, 2007.  
<https://www.nytimes.com/2007/11/15/science/15cnd-roach.html>
- Chen, Stephen. 2018. "A giant indoor farm in China is breeding 6 billion cockroaches a year. Here's why". *South China Morning Post*, April 19, 2018.  
<https://www.scmp.com/news/china/society/article/2142316/giant-indoor-farm-china-breeding-six-billion-cockroaches-year>
- Clark, Liat. 2013. "In defence of the cockroach: RoboRoach Kickstarter ignores ethics". *Wired*, June 10, 2013. <https://www.wired.co.uk/article/roboroach-kickstarter>
- Coffin, Shannen W. 2008. "WALL-E, No thanks". *National Review*, June 13, 2008.  
<https://www.nationalreview.com/corner/wall-e-no-thanks-shannen-w-coffin/>
- Copeland, Marion. 2004. *Cockroach*. Reaktion Books.
- Dell'Amore, Christine. 2010. "Cockroach Brains May Hold New Antibiotics?". *National Geographic*, September 11, 2010.  
<https://www.nationalgeographic.com/news/2010/9/100909-cockroach-brains-mrsa-ecoli-antibiotics-science-health/>
- Didham, Raphael & Leather, Simon & Basset, Yves. (2019). Ethics in entomology. Doi: <https://doi.org/10.1111/2041->

"Ethical Issues Regarding the Use of Invertebrates in Education". Backyard Brains. Accessed March 28, 2020.

<https://backyardbrains.com/about/ethics>

Fox, Douglas. 2007. " Consciousness in a Cockroach". *Discover*, January 10, 2007.

<https://www.discovermagazine.com/mind/consciousness-in-a-cockroach>

Garcia, Lindsay. "American Cockroaches, Racism, and the Ecology of the Slave Ship."

Environment & Society Portal, Arcadia (Autumn 2017), no. 29. Rachel Carson Center for Environment and Society. doi.org/10.5282/rcc/8048

Goodyer, Jason. 2019. " More than half of motorists view cyclists as subhuman ‘cockroaches’".

*Science Focus*, April 9, 2019.

<https://www.sciencefocus.com/news/more-than-half-of-motorists-view-cyclists-as-subhuman-cockroaches/>

Harding, David. 2013. "RoboRoach backpack lets users control insects, called 'cruel' to animals". *New York Daily News.*, November 10, 2013.

<https://www.nydailynews.com/news/national/roboroach-backpack-lets-users-control-cockroaches-article-1.1512243>

Heid, Markham. 2016. " You Asked: Why Are Cockroaches So Terrifying?". *Times*, July 13, 2016.

<https://time.com/4403068/cockroaches-bugs-insects-fear/>

Honeycutt, Kirk. 2017. " 'WALL-E': THR's 2008 Review". *The Hollywood Reporter*, June 27, 2017.

<https://www.hollywoodreporter.com/review/wall-e-review-2008-movie-1016979>

Hurt, Harry III. 1976. "The World's Most Despicable Bug". *Texas Monthly*, June, 1976.

<https://www.texasmonthly.com/articles/the-worlds-most-despicable-bug/>

Knutsson, Simon. (2015). "The Moral Importance of Invertebrates Such as Insects."

Doi: <https://doi.org/10.13140/RG.2.1.3025.4805>.

Lockwood, Jeffrey A. 1988. "Not to Harm a Fly: Our Ethical Obligations to Insects," *Between the Species*: Vol. 4: Iss. 3, Article 12. Doi:

<https://doi.org/10.15368/bts.1988v4n3.10>

Lockwood, Jeffrey A. 2013. " *The Infested Mind: Why Humans Fear, Loathe, and Love Insects*". OUP USA.

Marjanic, Suzana, Mettke-Hofmann, Claudia, and Preziosi, Richard F. 2019. "Cockroaches: From Belief Narratives to the Contemporary Visual Practice of Catherine Chalmers, or How Cockroaches Have Survived on Earth for More than 320 Million Years". *Folklore: Electronic Journal of Folklore*. 77. 139-158. <https://doi.org/10.7592/FEJF2019.77.marjanic>.

Moore, Paula. 2015. "Practice Radical Compassion: Be Kind to Cockroaches". *People for the Ethical Treatment of Animals*, April 20, 2015.

<https://www.peta.org/blog/practice-radical-compassion-be-kind-to-cockroaches/>

Murray, Robin L., and Heumann, Joseph K. 2016. *Monstrous Nature: Environment and Horror on the Big Screen*. U of Nebraska Press.

Mulder, Phil, and Shufan, Andrine. 2017. "Madagascar Hissing Cockroaches: Information and Care". *OSU Extension*, March, 2017.

<https://extension.okstate.edu/fact-sheets/madagascar-hissing-cockroaches-information-and-care.html>

Nicholls, Henry. 2015. "Cockroaches are not radiation-proof and most are not pests". *BBC Earth*, September 26, 2016.

<http://www.bbc.com/earth/story/20160926-cockroaches-are-not-radiation-proof-and-most-are-not-pests>

- Nuwer, Rachel. 2014. " Cockroaches: The insect we're programmed to fear". *BBC Future*, September 18, 2017.  
<https://www.bbc.com/future/article/20140918-the-reality-about-roaches>
- Oven, Alice. 2018. " Humane Insecticides: Why Bother?". *Nature ethics*, August 21, 2018.  
<https://www.natureethics.org/words/humane-insecticides>
- Pennisi, Elizabeth. 2015. "Cockroaches communicate via bacteria in their feces". *Science*, December 7, 2015.  
<https://www.sciencemag.org/news/2015/12/cockroaches-communicate-bacteria-their-feces>
- Sharp, Mark. 2015. "Cockroaches: everything you never wanted to know." *South China Morning Post*, April 22, 2015.  
<https://www.scmp.com/lifestyle/article/1773251/cockroaches-everything-you-never-wanted-know>
- Stanley, Christina R., Mettke-Hofmann, Claudia, and Preziosi, Richard F. 2017. "Personality in the cockroach *Diploptera punctata*: Evidence for stability across developmental stages despite age effects on boldness". *Food Research International* PLOS ONE 12(5): e0176564.  
<https://doi.org/10.1371/journal.pone.0176564>
- Tam, Luisa. 2019. " Why Hong Kong police group's use of word 'cockroach' to condemn protesters is both baffling and depressing". *South China Morning Post*, September 9, 2019.  
<https://www.scmp.com/news/hong-kong/society/article/3026410/why-hong-kong-police-groups-use-word-cockroach-condemn>
- Twilley, Nicola. 2015. "In Defense of the Cockroach". *The New Yorker*, August 15, 2015.  
<https://www.newyorker.com/tech/annals-of-technology/in-defense-of-the-cockroach>
- Whitley, David. 2012. *The Idea of Nature in Disney Animation: From Snow White to WALL-E*. Ashgate Publishing.



大福. 2019. "《黑鏡》的「甲由」寓言". *Medium*, September 2, 2019.

<https://medium.com/%E5%A4%A7%E7%A6%8F%E5%88%86%E7%AB%99/%9%BB%91%E9%8F%A1-%E7%9A%84-%E6%9B%B1%E7%94%B4-%E5%AF93%E8%A8%80-7629101d1293>