

## Paolo Bacigalupi's *The Windup Girl*

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*The Windup Girl*,<sup>1</sup> Paolo Bacigalupi's first novel, narrates life in Krung Thep, City of Divine beings – commonly known as Bangkok – in the late twenty-third century. By that time the world has gone from the 'Expansion' to the (petroleum) 'Contraction' period – in what Andrew Hageman terms 'a techno-industrial periodization'.<sup>2</sup> That is from having a global economy and a free market – a petroculture propelled by fossil fuels –, to suffering from an acute energy crisis (caused by the depletion of oil deposits and the scarcity of fossil fuels), as well as from a severe environmental crisis. These turning points resulted in famines and starvation which 'calorie companies' (agricorporations), producers of – among other things – genetically engineered sterile seeds, readily promised to solve. Instead, they ended up spreading a series of bioengineered plagues around the world in a struggle to monopolize food and seed production and distribution. By the twenty-third century the plagues have already devastated plant and animal life (including human life) across the whole planet, and mutate so fast that crops need to be constantly watched and analysed in order to prevent new outbursts. Calorie companies have managed to control most of the food production worldwide, genetically engineered animals have supplanted their extinguished or less advanced 'natural' counterparts, and the Japanese are creating posthuman beings as assistants and sexual toys, and as military personnel to compensate a diminishing and aged population. Meanwhile Thailand is a starved country whose worth is counted on meagre calories, but which has prevailed as an independent, self-sufficient nation thanks to the work of control and protectionism of an Environment Ministry, to a seed bank that keeps providing them with new genetic material, and to the work of the finest generipper in the world.

*TWG* thus depicts a genetic tapestry through bio-engineered fruits and trees, cat and elephant-like animals, and posthuman beings. In so doing it questions GMOs, or genetically modified organisms, as much as the concepts of 'human' and 'nature', calling to mind Noel Castree's analysis of the latter and its conceptual history.<sup>3</sup> It moreover questions the implications that these new life forms have in religious perceptions of the soul and the afterlife, from several different religious perspectives, and challenges the notions of 'ecological niche' and 'alien species'. The novel's approach to the broad and always controversial issue of GMOs therefore serves to raise questions about the limits of science and intellectual property, as well as it deconstructs the human fancy of being like gods, reminding of literary works such as Mary Shelley's *Frankenstein* and Philip K. Dick's *Do Androids Dream of Electric Sheep?* *TWG* moreover ends with the promise of a

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<sup>1</sup> Henceforth *TWG*.

<sup>2</sup> Andrew Hageman, 'The Challenge of Imagining Ecological Futures: Paolo Bacigalupi's *The Windup Girl*', *Science Fiction Studies*, 39/2 (July 2012), 283.

<sup>3</sup> Castree, Noel, 'Nature', in Joni Adamson, William A. Gleason and David N. Pellow, eds, *Keywords for Environmental Studies* (New York: New York University Press, 2016), 151–156.

queer world populated by transgressive beings and ‘the possibility for a new ecological paradigm to emerge’.<sup>4</sup>

These tensions around GMOs happen in a world where human beings can no longer survive without them, and certainly not without the technology that enables them. The world in *TWG* is starved, decimated as a consequence of a global energy crisis and of climate change. At the time of the novel the petroleum Contraction has slowed the world to such a point that carbon propelled vehicles have become the extravagance of the wealthiest or the means of the military, wars are fought over coal deposits, and human beings survive with the help of the energy produced by animal (including human) bodies. Moreover the world suffers from environmental phenomena such as disrupted weather patterns and sea level rise, and meanwhile the Thais hold on to their doomed city. Such a multifaceted environmental crisis is key to the plot and exemplifies how Bacigalupi is ‘trying to find ways to tell compelling and engaging human stories within [the] futures [predicted by environmental science]’.<sup>5</sup> Lastly, this widespread instability gets together in the novel with bigotry and religious fundamentalism, as social phenomena that are exacerbated in dire times.<sup>6</sup> In this line, the novel recounts several examples of religious fundamentalism previous to the time of the narrative, such as the attack of Muslim fundamentalists to Malay-Chinese in Malaysia, relating the fictional story to ongoing tensions in the country.<sup>7</sup>

Bacigalupi thus depicts a bleak future in light of the disturbing data and reports coming from environmental science, which prompts him to write about ‘worlds which are often diminished versions of our own present [...] because [he is] worried that we as a society aren’t particularly interested in changing our ways’.<sup>8</sup> In *TWG* that translates into a starved world, set in a dystopian future when most nation states have disintegrated, that survives in a quasi-state of apocalypse under the constant menace of fatal plagues in the height of climate change.<sup>9</sup> Bacigalupi who re-maps ‘a combined geopolitical and ecological imaginary’ by setting a climate change plot in the Global South, in an Asiatic country generally regarded as a touristic paradise,<sup>10</sup> uses this dreary scenario as a warning for the reader, cautioning about the risk of reaching a point of no return in the

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<sup>4</sup> Hageman, 300.

<sup>5</sup> Bacigalupi, *The Windup Girl*, (London: Orbit, 2010), ‘Interview’.

<sup>6</sup> The interrelation of environmental disasters aggravated by climate change, and religious fundamentalism calls to mind Kelley’s et al research on the Syrian drought and the Syrian war, which draws connections between climate change, environmental collapse and social instability. Colin P. Kelley et al, ‘Climate change in the Fertile Crescent and implications of the recent Syrian drought’, *PNAS* 112/11 (March 2015), 3241-3246, DOI: 10.1073/pnas.1421533112.

<sup>7</sup> The events in the plot recall the 13 May 1969 incident in Kuala Lumpur between Malay and Chinese citizens, and the posterior implementation of economic measures such as the New Economic Policy, as an attempt to favor Malays over Chinese citizens in Malaya. By the time of *TWG*’s publication discussions about these policies were still ongoing, see Robin Brant, ‘Malaysia questions ethnic preferences’, *BBC*.

<sup>8</sup> Bacigalupi, *The Windup Girl*, ‘Interview’.

<sup>9</sup> Other critics, such as Schneider-Mayerson describe *TWG*’s world as ‘diminished yet never desolate or stagnant - its inhabitants are familiarly restless, vibrant, and searching’. Matthew Schneider-Mayerson, ‘Climate Change Fiction’ in Rachel Greenwald Smith, ed., *American Literature in Transition, 2000–2010* (Cambridge: Cambridge University Press, 2017), 317.

<sup>10</sup> Hageman, ‘The Challenge of Imagining Ecological Futures’, 285.

environmental crisis, what in scientific terms has been expressed as crossing too many ‘planetary boundaries’.<sup>11</sup> He goes as far as to rebuke the readership by criticising, from this ominous future perspective, current practices of wasting food and burning limitless amounts of fossil fuels.<sup>12</sup> He does so, ironically, from the perspective of the character representing the neo-colonial interests, exposing the foolishness – past, present and even future – behind the socio-environmental crisis. *TWG* is therefore an extrapolative fiction building a ‘fear fantasy’ or a “‘if this go on” story’, where the author brings current anxieties to the fore of the plot (about GMO’s, energy scarcity, climate change and fundamentalism) and hypothesizes about how they might evolve in the future.<sup>13</sup> In order to achieve this successfully he employs multiperspectivity, telling the story from the point of view of a range of native and foreign, female and male, human and posthuman characters, to show different experiences, exposures, understandings, and ways to cope with the world and the crises he is depicting.

It is for this complex, imaginative and well-written entanglement of topics and characters that scholar Schneider-Mayerson has defined *TWG* as ‘one of the most innovative climate change novels to date’.<sup>14</sup> *TWG* has moreover received several prestigious awards such as the Hugo Award, the Nebula Award, the John W. Campbell Memorial Award and the Locus Award for best first novel. *Time* magazine named the novel one of the ‘Top 10 Books of the Year’, in 2009, and it was selected as ‘best science fiction book’ by the American Library Association in 2010. Through its extrapolation of current concerns *TWG* contributes to current debates, such as the production and repercussion of GMOs, by hypothesising about how necessary they might be if climate change worsens, by questioning the power of multinational biotechnological companies and the agribusiness, and by warning about the risk of biological warfare, as well as about the monopolisation of food production – particularly through patenting food sources such as seeds.<sup>15</sup> The novel moreover stresses the urgency of taking action in the present time to avoid the direst consequences of climate change predicted by scientists, and the relevance of looking for sustainable and efficient energy alternatives to fossil fuels, itself imagining a post petroleum future. It is indeed this imagining of a liveable (albeit not desirable) future what makes of *TWG* an engaging and bearable narrative dystopia.

The themes addressed in the novel, together with the extrapolative character of the narrative make of *TWG* a good text to use in the classroom. From literary or gender studies, to philosophy or biotechnology courses it can certainly facilitate discussions and serve as a good object of conceptual analysis. It can be approached ecocritically, for its depiction of a future world deeply affected by climate change, and serve to consider the extent to which literature can raise awareness and transmit environmental values and knowledge, as well as its capacity to depict the scale of climate change. Moreover, an environmental justice perspective can be applied to analyse how the narrative reflects

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<sup>11</sup> See Rockström et al, ‘A safe operating space for humanity’, *Nature*, 461/7263 (2009).

<sup>12</sup> Bacigalupi, *The Windup Girl*, 92-3.

<sup>13</sup> Long, James, ‘Interview with Paolo Bacigalupi - Part 2’. *Orbit*, 5 May 2011.

<sup>14</sup> Schneider-Mayerson, ‘Climate Change Fiction’, 316.

<sup>15</sup> For a critical journalistic review of scientists and environmental activists – particularly Vandana Shiva’s – opinions of GMOs see Michael Specter’s article ‘Seeds of Doubt’.

on the unequal impact of climate change and the derived migration of environmental refugees. Furthermore, this multifaceted climate fiction titled after the female posthuman character is full of detailed accounts of rapes and sexual assaults, as well as of erotic descriptions of female bodies in daily contexts, and of patriarchal views, worth of analysis from a gender perspective. *TWG* could also be studied from the economic lens and/or through a political ecology approach, for the way it depicts how economic, political and social systems are entangled with ecological thinking and practicing. It could moreover be analysed in a philosophy classroom, as a contemporary revision of philosophical questions about human nature and posthumanism, and about nature per se. Furthermore, it could be integrated for consideration in a bioethics course, or in similar subjects taught in the natural sciences, to consider different cultural interpretations of the ethics of genetic modification of plants and animals (including humans) in research and practice, as well as to debate how the knowledge produced by this field challenges pre-conceived ideas of what is 'natural'. Also, by combining these critical approaches the novel can be analysed from the broader and composite perspective of the environmental humanities. All in all *TWG* is a versatile narrative that might serve as a useful tool to engage students from any field in multiple different socio-environmental discussions, to foster self-reflection and a critical mind.

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