11 Zoontotechnics – Cultured Meat, Margaret Atwood's *Oryx and Crake* and Life after Animals

> [A] fundamental predicament for humans at the present moment within the Anthropocene (or properly human era) would appear to boil down to just this: on the one hand a recognition that humanity has come to be where it is due to a basically violent relation to non-human nature and animality, and on the other hand a sense that the nest of values, institutions, and practices that comprise the properly human world somehow require this violence in order to continue running as they are.[1]

Zoontotechnics, or Life, in Theory

> Pourquoi, au fond, ce désir de se débarrasser des animaux?[2]

Something like artificial meat has been almost a staple or standard topic in science and speculative fiction for the past century and even in praxis muscle tissue has been kept alive and grown in petri dishes for almost as long. Nevertheless, somehow this 'outrageous' and slightly 'monstrous' phrase, 'cultured meat', is a good illustration of what the equally monstrous, 'zoontotechnics', might mean.[3] Zoontotechnics in the current techno(cultural) science factional environment[4] conjures up nightmarish visions of all sorts of "electric animals",[5] biotech chimeras and 'humanimal' zoos.[6] Behind this monstrous compound with its complicated syntax combining zoo/zoē + ontology + technics lies the question of the

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[1] David Baumeister, "Derrida on Carnophallogocentrism and the Primal Parricide", *Derrida Today* 10.1 (2017): 66.

[2] Joycelyne Porcher, *Vivre avec les animaux: Une utopie pour le XXIe siècle* (Paris : La Découverte, 2011), p. 125 (Why, at bottom, this desire to get rid of animals?).

[3] "Zoontotechnics (Animality/Technicity)" was a conference organised by the Centre for Critical and Cultural Theory at Cardiff University on 12-14 May 2010. The call for papers is still available on the UPenn site at: https://call-for-papers.sas.upenn.edu/cfp/2009/08/18/zoontotechnics-animality-technicity-conference-cardiff-university-12-14-may-2010 (accessed 22/01/2024), but no proceedings were ever published. The core of the CFP provides the following context, namely "philosophical-ethical revaluations of the 'animal'", "renewed reflections on various aspects of technology and technics", both within and beyond "the emerging framework of posthumanism". Of the listed topics the conference was seeking to address, this chapter replies to and illustrates the following: "the relation of animality and/or technicity to posthumanism". At the conference, I was reassured by the fact that another participant, Neil Stephens, had made the same connection as me, in a paper entitled "Animality/Technicity for Lunch? Understanding In-Vitro Meat". Neil Stephens at the time was Cesagen Research Associate at Cardiff, member of the Genomics Network and specialist on stem cell research. He has since become one of the most important commentators on the topic of cultured or in vitro meat. I will return to some of his more recent publications below.

[4] On the notion of 'science faction', see my *Posthumanism: A Critical Analysis* (London: Bloomsbury, 2013).

[5] Akira Mizuta Lippit, *Electric Animal: Toward a Rhetoric of Wildlife* (Minneapolis: University of Minnesota Press, 2008).

[6] Cf. Donna Haraway's discussion of 'oncomouse', in: *Modest-Witmess@Second_millennium. FemaleMan©_Meets_Oncomouse©* (New York: Routledge, 1997), or Eduardo Kac's transgenic 'green rabbit' (which also makes a few appearances in Margaret Atwood's *Oryx and Crake*), cf. "GFP Bunny"; available at: https://www.ekac.org/gfpbunny.html (Accessed 29/01/2024).

Aristotelian 'bare' animal life, together the entire history of Western metaphysics, including Heidegger's *Destruktion* of it, the end(s) of humanism, as well as the entire tradition of thought that addresses the co-implication of hominisation (or anthropogenesis) and technology (techno-anthropogenesis). What an explosive cocktail, indeed. And the more one thinks about possible truncations and morphological permutations the more frightening it becomes. Zoontology (Wolfe), ontotechnics (Stiegler), zootechnics (Haraway),[7] which of these morphological elements are acting as qualifiers here, and what is being qualified? Does the 'zoonto-' work like a kind of prefix, as in pyrotechnics, or anthropotechnics, for example? Does 'technics' work like a suffix to 'zoonto-' – making an endless list of other suffixations thinkable, like zoonto-genesis, zoonto-politics, zoonto-ethics etc.? And what about the infix '-onto-', which gives rise to another long list of compounds and permutations? One could brood endlessly over the implications and potentialities of these concepts which, increasingly, seem to develop a life of their own.

But since they are all more or less about the regained prominence of the question concerning the 'meaning of life' they coincide with what could be called the latest phase in cultural theory's embattled history: after the theory, culture and science wars, we are in the middle of the 'life wars' and its, obviously, a question of survival. At stake is the shifting discursive ground over what life *is*, or over 'life-itself'. Life wars, about bio-, zoo-, thanato-, necro-politics, combined with bio-, info-, cogno-, nanotechnologies applied to reproducing, hybridising the living (*le* or *les vivant(s)*) that is today giving rise to all sorts of liminal ontologies (or, following Derrida, 'hauntologies')[8] and thus theories or thinking, in between life and death. Thinking, in Derrida's words, that is neither on the side of death, which is not a side you can (ontologically) *be* on, nor entirely identical with life, and therefore on the other side of life, maybe, where all forms of life and non-life, organic and inorganic seem to have been proliferating (or pro-*life*-erating): machines, cyborgs, viruses, genes, molecules, tissues, plants, minerals, crystals etc.[9] So much so that, increasingly, in theory we are dealing with forms of neo- or even ultravitalism, some of them attempting to free themselves from the very notion of 'life', from an ontology of life, and instead turn towards an inclusive and seemingly non-normative notion of the living. What exactly, in life, is 'living'? Is it some kind of pure force, the '*élan vital*' without the dangerous expansionism associated with that notion? What is this 'bare life', or *zoē*, as opposed to *bios*, if one agrees to follow Agamben and Foucault (and Aristotle) in this distinction?[10]

No wonder that there is so much talk of 'life' in theory these days, life in all its forms: on the one hand, a plurality of life forms, but also, on the other side, of life itself, bare life, *zoē*, *bios*, but, indissociably, death and hence necro- and thanatopolitics etc.[11] It is as if the 'end of

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[7] Cf. Cary Wolfe, ed., *Zoontologies: The Question of the Animal* (Minneapolis: University of Minnesota Press, 2003); Bernard Stiegler, *Technics and Time 1: The Fault of Epimetheus* (Stanford: Stanford University Press, 1998); and Donna Haraway, *When Species Meet* (Minneapolis: University of Minnesota Press, 2008).

[8] For the notion of 'hauntology', or the necessarily haunting quality of the ontological, see Derrida's, *Specters of Marx: The State of the Debt, the Work of Mourning and the New International* [1993] (London: Routledge, 1994).

[9] Cf. Derrida, *H. C. for Life…That Is to Say* (Stanford: Stanford University Press, 2006).

[10] Cf. Giorgio Agamben, *Homo Sacer: Sovereign Power and Bare Life* (Stanford: Stanford University Press, 1998).

[11] Achile Mbembe, *Necropolitics* (Durham: Duke University Press, 2019).

man' signalled by the antihumanist theory of the 1970sand 80s, has ironically given birth to 'life', life after people so to speak, posthumanist if not posthuman, maybe even post-theoretical, and possibly post-anthropocentric, life. For example life understood in Donna Haraway's term as 'multi-species flourishing', life in the form of bio- or zootechnical hybridisation, or the pro-*life*-eration of entangled 'naturecultures'. The last borderline and the last war was always going to be about life – life wars, or wars for life under global neoliberal conditions and their biopolitics.[12]

A few names are key to this turn to and proliferation of life in theory today. On the one hand, on the one side, approaching life from the side of death, so to speak, the late followers of Aristotle: Hannah Arendt, Michel Foucault, Martin Heidegger, Jacques Derrida, Giorgio Agamben etc. These are all in their own way thinkers of biopolitics as based on the impossible but necessary distinction between *bios* and *zoe*, and the ways in which modernity has been blurring this distinction. This distinction due to the generalisation of what Abamben (following Carl Schmitt) calls the 'state of exception' gives way to the exposure of 'bare life', which, in turn becomes the main 'material' for and therefore the main 'stake' of politics.[13]

Or, given our specific focus, the analysis of the 'meaning' of 'cultured meat', should we rather say, excuse the bad pun: the main 'steak' of politics, in memory of Roland Barthes's nation-building myth of *le steak-frites*?[14] As a more readily 'Anglo-American' association one might also think of the juicy virtuality of Cypher's steak, which makes him choose *The Matrix* over sordid 'porridge' reality.[15] The literature on the whole debate about the 'radicalisation' of Foucault's biopolitics in Agamben's work and to what extent this might or might not be complementary with Deleuze's notion of 'a life', or Derrida's use of '*le*' or '*les vivants*', has been thriving ever since.[16] It has been raising question, maybe even more crucially, to what extent these ideas are either opposed or contribute to the advent of a biotechnological society, of a biotechnical regime, based on the reproducibility of life, in Bernard Stiegler's words, where the "living (...) becomes a material for the industrial biological system", and where the biotechnological thus constitutes what he calls a "new device of tertiary retentions", which are themselves no longer controlled through scientific or theoretical criteria, but "which make it possible to produce in chimerical series, clones and other transgenic materials".[17] Another way of formulating this would be, following Eugene Thacker's call for a "biophilosophy for the 21st century", and to think of the era of merging biotech and infotech through biomedia, as the time of 'generalised breeding' – a 'pastoral' theme dear to Heidegger and his late follower Peter Sloterdijk, who suggests that we should see humanism as precisely that: a (by now failing) 'breeding' technique.[18]

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[12] Amongst the many titles that have spawned the theoretical discussion of biopolitics under global neoliberal conditions and biodigital technoscience see the seminal Nikolas Rose, *The Politics of Life Itself* (Princeton: Princeton University Press, 2006).

[13] See Giorgio Agamben, *State of Exception* (Chicago: University of Chicago Press, 2004).

[14] Roland Barthes, "Steak and Chips", *Mythologies* [1957] (London: Vintage, 1993), pp. 62-64.

[15] *The Matrix*, dir. Andy and Larry Wachowski (Warner Bros., 1999).

[16] Cf. Gilles Deleuze, *Pure Immanence: Essay on A Life* (New York: Zone Books, 2001); Jacques Derrida, *Life Death* (Chicago: University of Chicago Press, 2020).

[17] Bernard Stiegler, "Technoscience and Reproduction", *Parallax* 13.4 (2007): 38.

[18] Peter Sloterdijk, *You Must Change Your Life: On Anthropotechnics* (Cambridge: Polity, 2014).

On the other side of the bio-technics and necropolitics camp, maybe on the side of life-as-such (or 'life itself'), are the late and distant followers of Spinoza, Bergson, and Darwin, for example Deleuze and Guattari, Keith Ansell Pearson, or Rosi Braidotti and others, who are, one might say, proponents of a 'new vitalism' based on the idea of 'biocentrism' (as opposed to humanist, or *trans*humanist, anthropocentrism). Biocentrism is here understood as the celebration of all life, of life *as* life, life in all its *forms*, including material everyday life and maybe even artificial and technological life.[19] A life understood as "pure immanence", in the Deleuzian sense. This proliferation of life or lives, related to the rise of 'life sciences' and 'life technologies', including the advent of 'artificial life', goes far beyond any known modern Foucauldian "technologies of the self".[20] It has been critically developed in works by the already mentioned Nicolas Rose, as well as by Melinda Cooper, Kaushik Sunder Rajan, Keith Ansell Pearson, Susan Squier, or Richard Doyle, and so many others.[21]

While Agamben's take has been widely discussed, the new vitalism is maybe a little less present. To catch its mood I will look at a text by Rosi Braidotti, who accuses Agamben and arguably the entire 'phallogocentric' philosophical tradition he inherits and continues, of a "fixation on Thanatos" or, indeed, of "necropolitics". This stands in contrast to a more feminist emphasis on life-affirming biopolitics and its materialism (hence the label of 'feminist new materialism' this has given rise to). Instead, Braidotti (and others like Cixous before her, and a whole list of other feminist writers),[22] on her side, the side of life, she claims, argues that the emphasis should fall "on the politics of life itself as a relentlessly generative force. This requires an interrogation of the shifting inter-relations between human and non-human forces. The latter are defined both as in-human and as post-human".[23] In short, Braidotti thinks that "death is overrated". What she wishes to put in the place of "bio-power and necro-politics" is "the primacy of life as zoē", understood as "vitalistic, prehuman, generative life".[24] In thus opposing necropolitics, Braidotti follows Deleuze and Guattari in an attempt to "trespass all metaphysical boundaries" by celebrating a "becoming animal, becoming other, becoming insect, becoming machine", in short, becoming a "posthuman" body in what, to me at least, does not seem a particularly enviable prospect, however, namely: "a living piece of meat activated by electric waves of desire, a

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[19] Cf. Scott Lash, "Technological Forms of Life", *Theory, Culture and Society* 18.1 (2001): 105-120.

[20] Michel Foucault, *Technologies of the Self: A Seminar with Michel Foucault*, ed. Luther H. Martin, Huck Gutman and Patrick H. Hutton (London: Tavistock, 1988).

[21] Melinda Cooper's *Life as Surplus: Biotechnology and Capitalism in the Neoliberal Era* (Seattle: Washington University Press, 2008), Kaushik Sunder Rajan's *Biocapital: The Constitution of Postgenomic Life* (Durham: Duke University Press, 2006), Eric L. Santner's *On Creaturely Life: Rilke, Benjamin, Sebald* (Chicago: University of Chicago Press, 2006), Susan Squier's *Liminal Lives: Imagining the Human at the Frontiers of Biomedicine* (Durham: Duke University Press, 2004), or Richard Doyle's *Wetwares: Experiments in Postvital Living* (Minneapolis: University of Minnesota Press, 2003).

[22] For an overview see Stacy Alaimo and Susan Hekman, eds., *Material Feminisms* (Bloomington: Indiana University Press, 2008) and Diana Coole and Samantha Frost, *New Materialisms: Ontology, Agency, Politics* (Durham: Duke University Press, 2010).

[23] Braidotti, "Bio-power and Necro-politics: Reflections on an ethics of sustainability", *Springerin – Hefte für Gegenwartskunst* 2 (2007): n.p.; available online at: https://springerin.at/en/2007/2/biomacht-und-nekro-politik/ (accessed 29/01/2024).)

[24] Braidotti, "The Politics of Life as Bios/Zoē", in: Anneke Smelik and Nina Lykke, eds., *Bits of Life*: *Feminism at the Intersections of Media, Bioscience, and Technology* (Seattle: University of Washington Press, 2008), p. 177.

script written by the unfolding of genetic encoding, a text composed by the enfolding of external prompts".[25]

I hardly need to spell out how uncannily this resonates with the descriptions of cultured meat above (and further discussed below). This "becoming corpse" which Braidotti understands as a return to a "Spinozist ontology" set against the "metaphysics of finitude", which according to her negate life and overrates death, is affirmative, or the affirmation of life itself. It is 'neomaterialist', 'feminist' and 'embodied' and above all 'ecological' and 'postanthropocentric' in her words:

> The vital politics of life as zoē, defined as a generative force, resets the terms of the debate and introduces an ecophilosophy of belonging that includes both species equality and posthumanist ethics.[26]

Life, Braidotti maintains, "privileges assemblages of a heterogeneous kind. Animals, insects, machines are as many fields of forces or territories of becoming. The life in me is not only, not even human".[27]

I am using Braidotti here as an example of a certain strand of post- or neovitalist posthumanism, and I have to admit that I am slightly worried by its implications, at least as worried as I am about the phrase 'cultured meat'. Worried, for example, by the liberal use of the copula 'is', proliferating wherever there is a question of life. Worried about the ontologisation of life as such, and I wonder whether theory has to change its way of speaking to life and about life, as a result. In short, I find all this undoubtedly fascinating but also a little bizarre. Over the past two decades or so, Ivan Callus and I have been wondering, maybe even brooding, over how one might come to terms with the desires and anxieties that the spectre of the posthuman and the process of posthumanisation (or even posthominisation, if one is to believe the transhumanists) raises, while remaining 'critical' (which, no doubt, somewhere involves a space for a 'posthumanist', but not necessarily posthuman, subject). While the posthuman, as a figure, has been proliferating, and has indeed been *breeding* and interbreeding in an increasingly frenzied way, we have been trying to investigate theory's human *brooding* habits, so to speak. Zooming in onto the word 'brooding' suggested itself almost automatically when I began exploring the monstrosity of 'zoontotechnics' at work in the technoscientific and technocultural construction of cultured meat.

Meat, Cultured

> The story of [cultured meat] is a story of framing links between the now and a realm of potential futures.[28]

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[25] *Ibid*., p. 180.
[26] *Ibid*., p .183.
[27] *Ibid*., pp. 189-190.
[28] Neil Stephens, Alexandra E. Sexton and Clemens Driessen, "Making Sense of Making Meat: Key Moments in the First 20 Years of Tissue Engineering Muscle to Make Food", *Frontiers in Sustainable Food Systems* 3 (2019): 45.

What exactly would the ontology of cultured meat be? Despite all the arguments for and the undeniable benefits of regenerative tissue engineering, giving it a commercial boost by using its techniques to solve the growing demand for meat, to combat the economic inefficiency and the negative environmental consequences of intensive *in vivo* meat production, i.e. farming, breeding and slaughtering, not to speak of the reduction in animal suffering, despite all this, there is something 'disturbing' about the vision of a vegetarian future thanks to *in-vitro* produced meat. It is as if our meat culture believes it might cure itself by tucking into cultured meat, by having its meat cake and eating it, so to speak. In my brooding over this disconnect I was assisted by Erica Fudge (building on Jacques Derrida, in turn), who asks:

> If questions about nutritional value are set aside, what purpose does the act of consuming an animal possess? I take this as my central question here because meat-eating is not just an issue of nutrition: as Derrida wrote [in "Eating well"]: 'and who can be made to believe that our cultures are carnivorous because animal proteins are irreplaceable?' There is something else going on when an animal's flesh is consumed.[29]

Nick Fiddes's classic sociological study of meat and its symbolic value concludes that "meat's pre-eminence in our food system derives primarily from its tangibly representing to us the principle of human power over nature".[30] It is a symbol by which "western society – like many other societies – has long expressed its relationship to the world that it inhabits", which means that we do not eat meat "*in spite of* the domination of sentient beings", as a society, but "*because* of that power": [31]

> It is not that we each consciously exult in our mastery of nature whenever we bite into a piece of flesh, but we are brought up within a culture which has regarded environmental conquest as a laudable goal, and which has deployed meat as a primary means to demonstrate it.[32]

It is of course an ontological aspect, even an anthropo-onto-technical one that underlies carnivorousness or 'carnivoracity'. In eating the (significant) other I am becoming a self, by affirming my dominion, legitimated by my radical difference, established through the power to consume or assimilate, I become human. Or, as Fudge puts it: "Meat-eating is hegemonic in anthropocentric societies".[33]

Interestingly, Fudge concludes her amplification of Derrida's notion of 'carno-phallo-logo-centrism' by looking at in vitro meat production and asks why we do not just give up eating meat altogether instead of producing "fake meat"? And she goes on to answer her own question thus:

> Without meat-eating there is a possibility that we would no longer be human as we currently understand the term (…). By implication, we in the west need to have

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[29] Erica Fudge, "Why it is easy to be vegetarian", *Textual Practice* 24.1 (2010): 149 (149-166).
[30] Nick Fiddes, *Meat: A Natural Symbol* (London: Routledge, 1991), pp. 225-226.
[31] *Ibid*., p. 226 (original emphasis).
[32] *Ibid*.
[33] Fudge, "Why it is easy to be vegetarian", p. 149.

> dominion represented, legitimated and authenticated by animal flesh to be who we think we currently are. Without the categorical differences that dominion establishes, that sense of self would be lost.[34]

Fiddes, unsurprisingly, therefore goes on to paint an ambiguous picture regarding the 'future of meat'. Even though in vitro or cultured meat was not on Fiddes's sociological radar at the time, the developments he describes in his final future-oriented chapter are to us entirely recognisable and explain how the industrialisation of meat production should almost necessarily lead to 'synthetic' solutions because of falling "over-the-counter sales of red meat production":

> Increasingly, producers have had to divorce their products from associations with the flesh of real, live animals in order to maintain customer acceptability (…). A plethora of prepared and processed products is the result. In the process, however, the industry may well have sown for itself the seeds of an even greater problem. Heavily advertised 'coated nuggets' and exotic vacuum-packed dishes have persuaded consumers to continue buying meat in various new forms, but have also consolidated many people's disinclination to deal directly with raw flesh. The danger for meat producers is that there may be little further potential for disguising the product, and little prospect of convincing an increasingly squeamish public to return to the old ways.[35]

Given that Fiddes's study immediately follows the BSE scandal of the mid 1980s, it probably did not require a lot of imagination to predict that "a collapse of consumer confidence in the products of the industrial food industry look[ed] increasingly possible".[36] However, according to Fiddes, who captured a rising global awareness of concerns regarding sustainability throughout the 1980s, 1990s and ever since, it is the recognition that "non-human environment has needs which must sometimes override our immediate demands" to avoid "catastrophic deterioration in local and global ecosystems", that has caused the "reputation of meat, as a continuing symbol of human domination of nature" to suffer most severely.[37] Even though Fiddes's prediction that meat eating might eventually develop an equally negative image as unhealthy and anti-social as smoking, given the steady increase of vegetarianism and veganism, has not (yet) materialised, he might well have been right in claiming that "the turbulently declining reputation of meat, at the advent of the third millennium, may be a harbinger of the evolution of new values".[38] However, similar to 'real' (i.e. tobacco) smoking giving way to vaping, 'real' meat might increasingly be morphing into 'artificial' or cultured 'meat'.

Fudge's 'zoontological' argument for vegetarianism needs to be placed into this context. Giving up human dominion by deconstructing carnophallologocentric meat culture and by thereby risking our becoming inhuman, unhuman, or simply (nonhuman) animals, opens up some fascinating possibilities that are nevertheless at least as frightening as those provided by the cultured meat scenario itself. Fudge herself hints at the fact that giving up humanist

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[34] Fudge, "Why it is easy to be vegetarian", pp. 161-162.
[35] Fiddes, *Meat,* p. 231.
[36] *Ibid*.
[37] *Ibid*., p. 232.
[38] *Ibid*., p. 233.

(read: anthropocentric) ideas, values and justifications of 'dominion' that legitimate being carnivorous, erases the boundary between human and nonhuman animals not necessarily in view of a generalised vegetarianism but quite possibly something like the opposite, namely a generalised 'cannibalism':

> Eating meat is a declaration of human dominion (to consume animal flesh is to declare – with the teeth if not the voice – that these creatures are lower than us, that we have power over them). But eating meat is also an action that can, possibly, undo that dominion (…). [H]ow do you know you are not eating a human as you tuck into a steak?[39]

Because, one could say, in the end, 'we (human and nonhuman animals) are all meat', even 'dead meat', or worse, 'zombie meat', floating, growing, decaying in our own culture-media-serum – this is Haraway's idea of natureculture and Braidotti's 'posthuman body' pushed to a biotech extreme, one might argue. The end of human exceptionalism undoubtedly can also mean that: ultimate objectification and commodification of generalised humanimal meat. This is the reason, in my view, why a more vigilant posthumanism might be called for, maybe a posthumanism that is more of the slow, brooding, kind.

One starting point could be to look again at cultured meat – the in vitro production of animal muscle tissue for human consumption – and ask what exactly it is that causes the squeamishness, the 'disgust' or at least the deep ambiguity *vis-à-vis* what could, after all, by bypassing the whole rearing, farming and slaughtering process, spell the end of animal cruelty and thus of many animal rights concerns.? Might cultured meat not, eventually, allow us to tackle the whole idea of an essentially sacrificial metaphysics underpinning human exceptionalism (i.e. Derrida's notion of 'carnophallogocentrism').[40] As some animal rights groups have reportedly signalled: as far as we are concerned, if meat is no longer a piece of a dead animal there is no ethical objection to consume it, thus plunging into crisis the whole ideology of vegetarianism as we know it. My question would be whether growing animal tissue for consumption is still merely a matter of breeding and hence the next phase of zoontotechnics, or whether it already hints at a new kind of ontology, or hauntology, or *zoo*hauntology to be more precise? Is it, not technically but ontologically, or ontotechnologically speaking, more like (animal) *brooding*, rather than the necessarily anthropocentric idea of *breeding* which somewhere, even if problematically, always

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[39] Fudge, "Why it is easy to be vegetarian", p. 160.

[40] See David Baumeister's illuminating essay on "Derrida on Carnophallogocentrism and the Primal Parricide", cited as epigraph above, which helps clarify and substantiate Derrida's link between Freud's 'primal parricide' (and cannibalism) and the "schema of ingestion, symbolic yet constitutive, [which] underlies the human-animal relation", and which explains carnophallogocentrism's "contribution to the history of 'anthropo-centric subjectivity'" (p. 53):

> The animal father had already been proto-human and it was, after all, the desire on the part of the brothers to take the *animal* father's place (and not to become *human*) that motivated the parricide in the first place. At the same time, those brothers who enter into the civilizing contract post-mortem, though the first humans, retain a mark of the animal in their ritual re-ingestion of the father in the form of the sacrificial eating of non-human animals. Any pure humanity they might have is compromised by the repetition of this ritual sacrifice. (62; original italics)

presupposes a presumably quite human subject? In the standard accounts of hominisation breeding animals is usually seen as a key moment within anthropogenesis – agriculture and farming are the key 'technologies' responsible for the advent of 'society'.

In vitro, synthetic or cultured meat can be therefore seen as the ultimate stage of animal meat production, as Jocelyne Porcher maintains,[41] because of its promises of increased productivity and efficiency, of its superior 'zootechnics', with the added 'bonus' of reducing animal suffering (by *de facto* reducing animal existence it has to be conceded). As 'side-effects', it also promises to improve hygiene, food safety and reducing health hazards due to zoonoses (like BSE or COVID-19). On the other hand, from a more radical vegetarian/vegan point of view – despite the aspect of reducing animal suffering – in vitro meat could also be seen as a continuation of the human indulgence in animal instrumentalisation through ingestion. It would thus merely constitute an evasive action and a failure to tackle the real 'ethical' problems that animal liberation and radical ecology have been exposing. As part of a more general move towards tissue-engineering, stem-cell research and genetic-engineering, in vitro meat might also be seen as a mere by-product of larger, traditional humanist, concerns regarding the use of human tissue and human DNA for genetic and transgenic purposes, be they 'medical' or 'alimentary'.

After the "Zoontotechnics" conference, Neil Stephens went on to engage with my suggestion to understand cultured meat as 'zombie meat' or, more generally, as part of a general trend towards the 'zombification' (understood as a threat of the 'living-dead, dead-living or the living-never born' to the distinction between life and death). Cultured meat could be seen as part of this trend due to the further erosion of the human-animal boundary and the transformation of bio-techno-politics into a more general zoo-techno-politics it makes thinkable.[42] Stephens, however, proposes to treat in vitro meat as an "as-yet undefined ontological object" due to its largely 'promissory' (or one might also say 'speculative') character. It is in fact not only an *unrealised* ontological object but also a largely *discursive* object around which various future-oriented narratives have been constructed. As Stephens explains: "Such narratives seek to establish socio-temporal alignments between the material, the political, the commercial and the edible, in a formation that facilitates success in the field" (which includes the Stephens's own field of the sociology of science and technology, of course).[43]

Promissory narratives play a key role in the material-discursive 'construction' of in vitro meat, and the questions of commercial viability, social acceptance and ethical value it raises – and all this (as yet) more or less regardless of its actual technical feasibility. It is not only an as-yet unidentified ontological but also a so far purely 'promissory' or speculative object due to the great number of practical and ethical obstacles it continues to encounter (the question of the sourcing of the serum, the scaffolding technique, the 'texture' of the final product, the enormous production costs and energy needed, the question of the 'donor' animals and their treatment, and so on). This is not to say that cultured meat is 'pure' science (or speculative) fiction, but in fact it is science that deliberately blurs the boundaries between fact and fiction in a futural register (or "science faction", as I called it; i.e.

[41] Porcher, *Vivre avec les animaux*, pp. 121-126.
[42] Neil Stephens, "In Vitro Meat: Zombies on the Menu?" *Scripted* 7.2 (2010): 399-400.
[43] *Ibid*., p. 400.

"promissory science, one that exists more in the speculations and promises of its supporters than in terms of scientific results and marketable products").[44]

Brooding

> What humanists have blinded themselves to is the fact that a shepherd does not only herd but also cull, that he is both a herder and a breeder.[45]

I would argue, however, that *brooding* rather than *breeding*, zoontotechnically speaking, might be the more essential 'life technology'. To brood means "to incubate; to warm, protect, or cover (your young) with your wings or body", as the *OED* defines. In human animals, however, brooding also seems to bring about some surprising side-effects: "to think or worry persistently or moodily about; to ponder*;* to dwell on a subject or to meditate with morbid persistence" (*OED*). Why the negative connotations, if the process is ontologically so fundamental, if it links us as a species to arguably our most fundamental 'technics' while also putting us at least on a par with 'ruminating' cattle and 'pondering' poultry?

All these ruminations, one might say, are the result of the firing of a few synapses stimulated by the phrase 'cultured meat' and the subsequent association with brooding as something in between zoo- and anthropotechnics, or indeed even 'theriotechnics', because it is a technics 'before' any distinction between human and nonhuman animals. And this is the point where one could add another ingredient to the culture serum. In Peter Sloterdijk's provocative

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[44] Adam Hedgcoe, *The Politics of Personalised Medicine: Pharmacogenetics in the Clinic* (Cambridge: Cambridge University Press, 2004), p. 27, quoted by Stephens in "Growing Meat in Laboratories: The Promise, Ontology, and Ethical Boundary-Work of Using Muscle Cells to Make Food", *Configurations* 21.2 (2013): 162. As Stephens et al. explain in a later study in which they seem themselves to be much more implicated in this process of discursive construction of cultured meat as future solution of global climate change, and which needs to overcome 'challenges' to fit into the emerging neoliberal marketisation of what they now, interestingly, call "the emerging field of cellular agriculture": "Large-scale production [of in vitro meat] is significantly more challenging, the key issue being the production of effective and appropriately priced culture media. The most ambitious production target – producing cultured meat on a scale that could make marked impacts on global climate change – is likely to take many decades, if it is at all possible" (cf. Stephens et al., "Bringing cultured meat to market: Technical, socio-political, and regulatory challenges in cellular agriculture", *Trends in Food Science and Technology* 78 (2018): 163). In a slightly later, also co-authored, article Stephens provides once again a more critical intervention and gives an account of "the first twenty years of tissue engineering muscle to make food". He also differentiates between various phases and themes, i.e. the "cultured meat institutional context" and the "cultured meat interpretative package" (Stephens, Sexton and Driessen, "Making Sense of Making Meat", p. 1). While the technical issues for cultured meat production largely remain, the discursive construction, one could argue, has substantially concretised in terms of vying for investment and finding the right marketing pitch – what one might call the discursive 'normalisation' of speculative meat and the anticipated speculation on its future market value. A classic case of "reified life", one might argue, cf. J. Paul Narkunas, *Reified Life: Speculative Capital and the Ahuman Condition* (New York: Fordham University Press, 2018).

[45] Hannes Bergthaller, "Housebreaking the Human Animal: Humanism and the Problem of Sustainability in Margaret Atwood's *Oryx and Crake* and *The Year of the Flood*", *English Studies* 91.7 (2010): 734.

interventions a while ago, developing what he called a "prophetic anthropology",[46] he discussed the notion of 'anthropotechnics' – the evolutionary 'production' of the human alongside the development of technics and technology (which parallels Bernard Stiegler's work). Given this long term (anthropotechnical) view of hominisation, the current biotechnological turn is merely the latest development in the creation of the necessary conditions under which the anthropotechnical production proper of the human can occur. From the originary condition Sloterdijk refers to as the "human greenhouse" (*Menschentreibhaus*), an 'insulation mechanism' that creates a protective interiority where human evolution and especially human 'cerebralisation' can take place, derives the contemporary prospect of an anthropogenesis as an (auto)anthropotechnical 'breeding process' through bioengineering (i.e. eugenics).

Current eugenics, tissue engineering and biotechnology in general would thus merely be the logical outcome if not the logical conclusion of the original exteriorised zoo-anthropo-technics of (cattle) breeding, which itself, in turn, was made possible by the interiorised creation of a protective 'bubble' for brooding. One would need a lot more time and space to do justice to Sloterdijk's argument, but what interests me here in particular is how Sloterdijk, in following and radicalising Heidegger (and arguably, virtually all those thinkers for whom technics remains fundamentally anthropotechnics), ignores or at least downplays the 'animal question' that is at the core of hominisation and anthropotechnics, for it remains unclear as to what extent the human greenhouse (the 'breeding' place where humans can brood) would be radically different from the 'brooding' process going on in the 'animal realm' more generally. Brooding, is a much more fundamental 'theriotechnics' and as such precedes and underlies Sloterdijk's model, but remains repressed.

The generalised brooding metaphor, however, is also what opens up this fascinating but 'monstrous' parallel I have been brooding about, namely the various biotechnological 'meat culture' scenarios outlined above, as a quite unforeseen by-product of the erosion of the human-animal boundary. The erosion due to the advent of cultured meat and tissue engineering might, quite unexpectedly, not only lead to the 'end' of vegetarianism and to new forms of cannibalism, but maybe to the end of animals as such. It also shows that behind the current theoretical return to questions of 'life', 'bare life', 'bios' versus 'zoē' etc., lies a more fundamental anxiety than the question of the human or the animal, namely what one might call the (zo)ontology of brooding itself. It is an entirely different form of 'biopolitics', one that promises to upset (t)issues of life even 'before' the distinction between animal and human, and maybe even before the vegetal and the animal. It is therefore also located before any 'imaginary' alternative between vitalist (or affirmative) biopolitics and necropolitics.

Speculative Fiction – Oryx and Crake and *Cultured Meat*

[46] Peter Sloterdijk, *Regeln für den Menschenpark – Ein Antwortschreiben zu Heideggers Brief über den Humanismus* (Frankfurt: Suhrkamp: 1999), translated as: "Rules of the Human Zoo: A Response to the *Letter on Humanism*", *Environment and Planning* D 27 (2009): 12-28; and its companion piece: *Das Menschentreibhaus – Stichworte zur historischen und prophetischen Anthropologie* (Weimar: Verlag und Datenbank für Geisteswissenschaften: 2001).

> Literature is an uttering, or outering, of the human imagination. It puts the shadowy forms of thought and feeling – heaven, hell, monsters, angels, and all – out into the light, where we can take a good look at them and perhaps come to a better understanding of who we are and what we want, and what our limits may be. Understanding the imagination is no longer a pastime or even a duty but a necessity, because increasingly, if we can imagine something, we'll be able to do it.[47]

The text that brings all these aspects together, in my view, is Margaret Atwood's *Oryx and Crake* (2003).[48] Atwood classifies her novel as "speculative fiction",[49] which, as she explains, more so than science fiction proper, allows authors like her to "explore", e.g. "consequences of new and proposed technologies in graphic ways, by showing them fully up and running". It also allows her to "explore the nature and limits of what it means to be human in graphic ways, by pushing the envelope as far as it will go".[50] This exploration – which coincides both with posthumanist theory and the kind of science faction to be encountered in popular science magazines as well as science policy documents like the ones surrounding cultured meat with its 'promissory' narratives – allows the writer to stretch the imagination while still using the 'conventions of realism'. *Oryx and Crake* in this sense, even though it pictures a postapocalyptic scenario, after the near-extinction of the human species through an extreme act of bioterrorism, is not only a classic science fictional 'dystopia' combined with a 'last man narrative' but also contains 'utopian' elements of what a biotechnologically determined world might look like – a fact that led Atwood to speak of a new genre – "ustopias" (a combination of utopia and dystopia, which signals their inevitable entanglement).[51]

What Atwood thus explores in *Oryx and Crake* is "how far can humans go in the alteration department before those altered cease to be human?"[52] On the one hand, she focuses on a group of 'designer people', the 'Crakers'. These are named Crake, the bioengineer responsible for the near-extinction of non-genetically engineered humans, and who is himself named after an extinct bird. He develops the virus who kills of all the 'non-designed' humans and animals, except for his friend Jimmy, who having received an antidote by Crake believes himself to be the lone human survivor and calls himself (the abominable) 'Snowman'. There are also many other engineered 'creatures' in the book, most importantly for my present context, the so-called "Chickie Nobs" – "chicken objects modified so they grow multiple legs, wings, and breasts. They have no heads, just a nutrient orifice at the top,

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[47] Margaret Atwood, "*The Handmaid's Tale* and *Oryx and Crake* 'In Context'", *PMLA* 119.3 (2004): 517.

[48] Margaret Atwood, *Oryx and Crake* (London: Virago, 2004).

[49] Atwood, "*The Handmaid's Tale* and *Oryx and Crake* 'In Context'". I will not be providing a detailed reading of the novel, nor will I speak about its immediate context, as part of the *The MaddAddam Trilogy*. Neither can I provide an overview of the extensive literature that has since accumulated on *Oryx and Crake*. However an early chapter I can recommend is Coral Ann Howells's "Margaret Atwood's dystopian visions: *The Handmaid's Tale* and *Oryx and Crake*", in: Howells, ed., *The Cambridge Companion to Margaret Atwood* (Cambridge: Cambridge University Press, 2006), pp. 161-175. I will instead focus on those readings that have specifically foregrounded the aspect of cultured meat in the speculative biotechnological framework the novel 'imagines'.

[50] Atwood, "*The Handmaid's Tale* and *Oryx and Crake* 'In Context'", p. 525.

[51] Atwood, "Dire Cartographies: The Roads to Ustopia", in: Atwood, *In Other Worlds* (London: Virago, 2011), pp. 66-96.

[52] *Ibid*., p. 91.

thus solving a problem for animal rights workers: as their creators say, 'No Brain, No Pain'".[53] In brackets, Atwood adds: "(Since *Oryx and Crake* was published, the Chickie Nob solution has made giant strides: lab-grown meat is now a reality, though it is probably not in your sausage yet)".[54]

Literary and cultural criticism has since, unsurprisingly, focused on this arguably most prominent (science) fictional representation of cultured meat.[55] Susan McHugh's often cited article on cultured meat in fiction,[56] uses *Oryx and Crake* to illustrate that "novelists have long used the disgust elicited by fake meat as a flash point for eco-minded critique".[57] McHugh's real interest, however, is to show how "fake meat appears to enable distinctions among human, animal, and other agency forms", a context in which "fake meat proves one of the most effective mechanisms which the novel (…) entertains without finally deciding between humanist and posthumanist environmental perspectives".[58] The question of where *Oryx and Crake* might stand with regard to humanism and posthumanism is a point I will return to in the conclusion. For the moment, and in the context of my discussion of what 'zoo-ontological' and 'zoo-ethical' status cultured meat might have, I will highlight what, in McHugh terms, actually questions "whether and how tissue-cultured meat remains animal",[59] or indeed "post-animal", and show "how much more is at stake in tissue culturing than minimalizing ecological hoofprints or alleviating farm-animal suffering".[60] What is at stake, or at steak, with in vitro meat, as "the realization of over a century of speculative imaginaries", as Nora Castle writes,[61] is an (ontological) 'instability' in the meaning cultured meat provokes, and "which requires both a distancing from and a connection to the 'animal' in order to 'succeed' either as a retail product or in its self-assigned techno-utopic environmental and ethical mission".[62] And as I would add, it highlights the crucial ambiguity that the 'animal' (and our partaking in 'animality') plays for posthumanist thinking more generally, i.e. 'we' humans are animals, 'we' humans eat animals, but what exactly distinguishes eating (nonhuman) animal meat from eating human 'flesh' or cannibalism?

In other words, it is the (humanist, anthropocentric) distinction between human and animal that is at steak in cultured meat and the speculative and science factional narratives that are constructed around it which play with a 'post-animal' discursive imaginary.[63] According to Castle, Atwood's "ChickieNobs" enact a twofold critique. On the one hand, they evoke the

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[53] *Ibid*., p. 92.
[54] *Ibid*.
[55] This is despite the fact that *Oryx and Crake* is only briefly mentioned in McCorry and John Miller's volume on literature's engagement with 'meat critique', cf. Miller, "The Literary Invention of In Vitro Meat: Ontology, Nostalgia and Debt in Pohl and Kornbluth's *The Space Merchants*", in: McCorry and Miller, eds, *Literature and Meat since 1900* (Cham: Palgrave Macmillan, 2019), p. 96.
[56] Susan McHugh, "Real Artificial: Tissue-cultured Meat, Genetically Modified Farm Animals, and Fictions", *Configurations* 18.1-2 (2010): 181-197.
[57] *Ibid*., p. 181.
[58] *Ibid*., p. 184.
[59] *Ibid*., p. 191.
[60] *Ibid*., p. 197.
[61] Nora Castle, "In Vitro Meat and Science Fiction: Contemporary Narratives of Cultured Flesh", *Extrapolation* 63 (2022): 150.
[62] *Ibid*., pp. 150-151.
[63] *Ibid*., pp. 156-157.

way nonhuman farm animals are 'de-animalised' through mass-production by industrialised agriculture under neoliberal bio-zoo-techno-economic conditions. On the other hand, the in vitro meat of Atwood's novel shows another stage in nonhuman animal 'subjugation', through genetic technology and ultimately 'zombification', as mentioned above, i.e. through transformation into living-dead nutritional material (as distinct from any purely vegetal, i.e. 'vegan', food source):

> In order to succeed as a product, [in vitro meat] needs to be identified as *meat*, as opposed to plant-based 'meat' products or vegetarian/vegan alternatives like tofu. It simultaneously, however, needs to be distinct from *animal*, to maintain distance from the negative associations of industrial animal agriculture. The ChickieNobs reassert the animal-ness of lab-grown meat, even as the animal-ness they depict is contorted and horrific.[64]

We are thus here concerned with a "transformation in the genetic manipulation of [nonhuman animals] for the benefit of humans",[65] which has implications for both, human and nonhuman animals. In fact, in vitro meat and the promissory role it is supposed to play may be bad news both for animals and humans; for nonhuman animals because their genetic transformation into 'living-dead' material under neoliberal conditions spells out a further 'devaluation', distancing and invisibilisation; for humans, because it does not really tackle the carnophallogocentric problem of meat-eating but in fact opens up the question of cannibalism, or: why would it be so wrong to do the obvious – treat humans just as animals and use their 'flesh' as 'meat', provided it can be sourced purely genetically. ChickieNobs or Manburgers, what would, in fact, be the difference? Post-animal, post-human, neoliberal bio-zoo-technology would preferably make 'zombies' of all of 'us'; and, best of all, from a vegan (maybe les form a critical animal studies) point of view, there are unlikely to be any major objections.

Unsurprisingly, Atwood's novel thus plays an important role for J. Paul Narkunas's argument in his analysis of biopolitics, "speculative capital" and the reification of life as an economic object for financial speculation.[66] Narkunas exploits the parallel between financial speculation (as the main driving force behind global neoliberalism and its increasing tendency to 'reify' life and turn it into a consumable thanks to a combination of digitalisation and genetics) and speculative fiction, which he, nevertheless claims as a "set of tools for thinking life differently, enfiguring these alternative lives and modes of thought that already reside among us".[67] *Oryx and Crake* with its postapocalyptic setting and its genetically

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[64] *Ibid*., p. 159 (original emphasis).
[65] *Ibid*., p. 160.
[66] Narkunas, *Reified Life*, p. 3. See also Justin Omar Jonston's more complex argument regarding the involvement of posthumanism in this process in *Posthuman Capital and Biotechnology in Contemporary Novels* (Cham: Palgrave Macmillan, 2019). Amelia DeFalco sees Atwood's novel's speculations more as an echo of the critiques offered by critical posthumanism, cf. her "MaddAddam, Biocapitalism, and Affective Things", *Contemporary Women's Writing* 11.3 (2017): 432-451. Most promisingly, however, in my view, Sherryl Vint proposes the notion of "epivitality" to characterise the "subsumption of life by capitalism", which demands "new biopolitical figurations", cf. her *Biopolitical Futures in Twenty-First-Century Speculative Fiction* (Cambridge: Cambridge University Press, 2021), p. 3.
[67] Narkunas, *Reified Life*, p. 28.

altered or 'transgenic' (post)humans and (post)animals shows the devastating effects that speculative financial capital, combined with bioengineering, might have. Narkunas recruits Atwood's novel for what he sees as the greatest danger in this context, namely the 'instrumentalisation' of life by biotechnological corporations within the context of free market capitalism – an economic process that actually welcomes or, as one might say, enacts ideas like postanthropocentrism and antispeciesism but not necessarily in the sense that critical posthumanism and animal studies might advocate them. A 'reified' notion of 'life itself' or 'life as such' as a commodity in its biocentrism actually works best if human and nonhuman animals are both seen as 'biomass' and 'biomatter' awaiting their further synthesising, commodification and consumption.

The real question in this scheme is, who is going to be left to act as consumer if it is not humans? In a scenario where humans are both objects and subjects of bioconsumption the question of cannibalism begins to develop more than its usual symbolic meaning. Or, as Narkunas puts it bluntly: "critiques of anthropocentrism ignore how capital, through the biotechs, has already taken the piss out of the human and is creating a world that operates and creates existences outside of human conceptualization".[68] In particular, and this is also thematised in Atwood's novel, "recent advances in tissue engineering, stem cell research, and biotechnology delineate life as a nonanthropocentric process", which, according to Narkunas, requires "thinking life as an individuating process", in order to "frustrate the thingification of life that capital needs to reduce life to a network of objects".[69] Hence the 'life wars' that have been playing themselves out in theory or contemporary thought, mostly in a post-marxist and speculative register, as outlined above.

Despite the parallel of speculation in fiction and economy, both Atwood and Narkunas still seem to believe in the 'critical' possibilities of speculative fiction. At its best, Sherryl Vint claims, "speculative fiction can help us envision and materialize alternative futures that seek to transform rather than intensify contemporary injustices".[70] At its worst, however, it may be recruited, as seen in the commercial in vitro meat narratives, by those very neoliberal market forces (some) speculative fiction seeks to critique by 'imagining', or better 'imagineering',[71] its potential consequences – consequences that the 'promissory' narratives

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[68] *Ibid*., p. 198.

[69] *Ibid*.

[70] Vint, *Biopolitical Futures in Twenty-First-Century Speculative Fiction*, p. 8. In her contribution on "Posthumanism and Speculative Fiction", in: Stefan Herbrechter et al., eds., *The Palgrave Handbook of Critical Posthmanism* (Cham: Springer, 2021), pp. 225-246, Vint sees speculative fiction not only as a resource for scholarship about posthumanism but also as a "site of posthumanist theorizing in its own right" (p. 235), which "fuses futures extrapolated from contemporary technological contexts with posthumanist theory" (pp. 235-236). The example she uses, interestingly, is that of "lab-grown meat" (she specifically refers to *Oryx and Crake*), which raises the question: "Does this technology save animal suffering, or does it merely further naturalize habits of meat-eating that reinforce ecologically disastrous ways of being human?" (p. 236).

[71] On the notion of 'imagineering' see Manuela Rossini, "Figurations of Posthumanity in Contemporary Science/Fiction – all too Human(ist)?" *Revista canaria de estudios ingleses* 50 (2005; special issue "Literature and Science", ed. T. Monterrey): 21-36. Another way of formulating this is provided by Arianna Ferrari and Andreas Lösch as 'envisioning', cf. their "How Smart Grid Meets In Vitro Meat: On Visions as Socio-Epistemic Practices", *Nanoethics* 11 (2017): 75-91. As they put it: "IVM has become a vision, intended as a practice capable of creating new meanings and new

of cultured meat as a potential solution to climate change and animal suffering tend to hide or at least to downplay. Reapporpriation by the very discourse one wishes to critique is exactly the kind of challenge that (critical) posthumanism also faces in connection with its target discourse, namely humanism. This includes humanism's future trajectory as precisely that kind of discourse that increasingly embraces the combination of biotechnology and global neoliberal capitalism as the only viable, namely 'transhumanist', future. (Liberal, or rather neoliberal) humanism colludes with the new 'epivitalist' environment and goes so far as jettisoning the very human that used to be its untouchable, inalienable, centre. Humanism in its current ('promissory') transhumanist form is happy to sacrifice the last remainders of human 'bio-animality' to defend its 'essence', which it wagers is detachable from its biological substrate. It embraces biotechnology, the instrumentalisation and commodification of life in return for a (promissory) virtualised, synthetic and 'immaterial' future existence.

In vitro meat, in this context, acquires 'symptomatic' value, however, not in terms of a defence of traditional humanist values based on 'disgust', but also not in terms of a traditional animal liberation and animal rights discourse with an additional ecocritical dimension. It is a symptom of the combined disappearance of human and nonhuman animals in the face of an already posthumanist (or in fact, inhuman) system – a system designed by humans, but which in fact functions best 'without' humans. Solidarity with the nonhuman animal, under these conditions, is vital for the combined survival of both humans and animals. This is not in any way a justification for the way humans have been treating 'their' nonhuman (animal) others, on the contrary; but it is an argument against the disappearance, of humans, animals and, of course, also their differentiation. It is our responsibility to guarantee not only our own survival but also that of as many of the other animals as possible – why else talk of biodiversity and its current unprecedented loss?[72]

Oryx and Crake, in my view, is something like the final argument the last humanist, Jimmy-Snowman, is having (posthumously, or posthumanly) with his 'friend', the misanthropist-cum-transhumanist, Crake, about the 'future of humanity'. What is really at stake in their argument, however, is the future of the steak, so to speak. It is no coincidence that the novel practically opens and ends on what one might call 'barbecue scenes'. The first, in the chapter entitled "Bonfire", where an "enormous pile of cows and sheep and pigs" is burnt as a result of their contamination with a malignant "bioform", possibly introduced as an act of industrial bioterrorism to "drive up prices". The smell reminds Jimmy of "the barbecue in the

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narratives linking topics which were previously regarded as separate. The non-medical use of a medical technology such as tissue engineering paves the way for creating food security and ethical conditions in food production" (p. 81). In doing so, it becomes "a vision which aims at reconsidering the way in which we think about food, meat and animals. It is not only an innovation that expresses different promises and expectations (…); it also acts, empirically, as an *interface*, allowing translations between current problems of traditional meat production and consumption and images of the food of the future" (*ibid*.; original emphasis).

[72] One could argue that this also is part of what Jamie Lorimer calls "the probiotic turn" based on "human interventions that use life to manage life, working with biological and geomorphic processes to deliver forms of human, environmental, and even planetary health"; cf. Lorimer, *The Probiotic Turn: Using Life to Manage Life* (Minneapolis: University of Minnesota Press, 2020), p. 2.

backyard", but the fact that the charcoaled "animals are looking at him reproachfully out of their burning eyes" makes him uncomfortable: "Steaks didn't have heads".[73]

In the last chapter of the novel, "Footprint", Jimmy-Snowman realises that he is in fact not the sole human survivor, after all, and has to come to terms with this insight, i.e. he is torn between 'empathy' for his own species and his new role of 'shepherd' of the future generation (the Crakers, or the 'new (i.e. post-) human)').[74] The encounter with the other survivors forms the other 'barbecue scene' because the other three humans ("all three of them look wasted", like Jimmy himself), "are roasting something – meat of some kind".[75] It is in fact this very carnivorous act that makes Snowman decide to kill them, because they are roasting a rakunk (a transgenic animal, a mixture of a skunk and a racoon, designed as pet). He undoubtedly remembers how upset he was, when he lost his own best rakunk friend (his mother 'released' it into the wild when she left him and his father): "They must have shot it. The poor creature". This comes only a few pages after he had to defend himself against some pigoons (pigs with human tissue and a human 'neocortex' originally designed for organ transplants) who want to eat him while vultures circle above "waiting for him to be meat".[76]

Undoubtedly, Atwood's novel is about meat, about how 'flesh' becomes 'meat', or the transition 'from animal to edible',[77] only that the human animal is no longer in control of this process. What does that mean for a species that has traditionally defined itself through its 'carnophallogocentrism'? It becomes a species that can no longer 'trust' itself. And this is, in my view, where the real posthumanist moment in *Oryx and Crake* occurs. Even while Jimmy-Snowman is disgusted by his fellow humans and their cruelty towards 'his' rakunk, he cannot help his own 'carnivorous' reflexes: "Snowman hasn't smelled roast meat for so long. Is that why his eyes are watering?"[78] The reader is here led to believe that Snowman can no longer trust his (human animal) affects – anger and hunger, empathy and rage – which further illustrates Jimmy's earlier uncanny insight: "Perhaps he was the danger, a fanged animal gazing out from the shadowy cave of the space inside his own skull".[79]

For all the speculative figurations of the 'posthuman' the novel offers, i.e. bioengineered animals and humans in a postapocalyptic world after the great evolutionary 'reset' provoked by an act of global bioterror, the only actual 'posthumanist' moment the novel, as a representative of the most humanist institution of 'literature', can produce is a crisis in self-identity: what does it mean to be human? This has been the role of literature all along, speculative or not, only that it now increasingly involves a self-doubt at a species level, not only that of the privileged individual. No doubt this is valuable, and somehow still tragically 'ennobling', but it certainly also shows that traditional (anthropo)technologies of 'self-

[73] Atwood, *Oryx and Crake*, pp. 17-20. This is an obvious allusion to the animal 'pyres' seen at the height of the BSE crisis, and which has been (controversially) referred to as an 'animal holocaust', as Jovian Parry reminds us in "*Oryx and Crake* and the New Nostalgia for Meat", *Society and Animals* 17 (2009): 243.

[74] Even though Jimmy-Snowman sees himself, self-ironically, as an "improbable shepherd" (*Oryx and Crake*, p. 412).

[75] *Ibid*., pp. 431-432.

[76] *Ibid*., p. 416.

[77] Cf. Noelie Vialles, *Animal to Edible* (Cambridge: Cambridge University Press, 2008).

[78] *Oryx and Crake*, p. 432.

[79] *Ibid*., p. 307.

domestication', to speak with Peter Sloterdijk once more, no longer work.[80] Under the condition of bio-zoo-politics and transgenic technology the human 'self-taming' (or 'housebreaking', to use Bergthaller's term), that humanism thought it could basically achieve through 'literacy', is in crisis – a crisis that articulates itself, on the one hand, in (for the moment, speculative) postapocalyptic 'world-without-us' scenarios, and, on the other hand, in the erosion of the boundary between the human and nonhuman animal, which is itself the result of the pressure that the erosion of another boundary, namely between the organic and the inorganic, the living and the dead, has been placing on their common biology.[81]

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[80] See Hannes Bergthaller's already cited reading of the novel in "Housebreaking the Human Animal: Humanism and the Problem of Sustainability in Margaret Atwood's *Oryx and Crake* and *The Year of the Flood*". The reference here is again to Peter Sloterdijk's "Rules of the Human Zoo: A Response to the *Letter on Humanism*", a speech which later became part of Sloterdijk's volume *Du mußt dein Leben ändern: Über Anthropotechnik* – you have to change your life. It is not by coincidence that both Sloterdijk and Crake choose this motto by Rilke to speak of "technologies that make us (better) humans", after the demise of humanism. See the list of Crake's fridge magnets (*Oryx and Crake*, p. 354) where the misspelt phrase "Du musz dein Leben andern" appears just before the equally telling "To stay human is to break a limitation".

[81] Which is, precisely, the starting point for practices that are located within contemporary 'bioart'. In fact, it is within these 'bioaesthetic' critical practices that cultured meat as an ontological challenge actually made its first appearance, rather than in speculative fiction as such. I am referring specifically to Oron Catts and Ionat Zurr's early experimental installations which are part of their "Tissue Culture and Art Project" (since 1996), e.g. the 2003 "Disembodied cuisine", which explored and indeed pioneered, the scaffolding technique used for "victimless" lab-grown meat, and as an illustration of what they called "semi-living sculptures". Cf. for example, Oron Catts and Ionat Zurr, "Growing Semi-Living Sculptures: The Tissue Culture & Art Project", *Leonardo* 35.4 (2002): 365-370. In extending the remit of life through tissue-engineering (biotechnology and transgenics) and creating new life forms, their aim is to increase 'cultural awareness' of the notion that "we are all made out of communities of cells" and to raise the ethical question of 'care' regarding 'semi-living' structures and artificial life more generally (p. 370). Like the writer of speculative fiction and the critical posthumanist, the bioartist faces the challenge of remaining critical by using the same conceptualities and, in the case of bioart, even the same practices of that which is being critiqued, i.e. speculation (of capital), humanism, and the biotech industry. See Catts and Zurr, "The Ethics of Experiential Engagement with the Manipulation of Life", in: Beatriz da Costa and Kavita Philip, eds., *Tactical Biopolitics: Art, Activism, and Technoscience* (Cambridge: MIT Press, 2008), pp. 124-142. Catts and Zurr, in their bioaesthetic treatment of in vitro meat arguably still provide the best critique of the practice: "It should be remembered that animal cells cannot manufacture nutrients from nothing: in-vitro meat is merely an engineering exercise in translating/synthesising nutrients from other sources. In other words, parts of the living are fragmented and taken away from the context of the host body (and this act of fragmentation is a violent act) and are introduced to a technological mediation that further 'abstracts' their liveness. By creating a new class of semi-being, which is dependent on us for survival, we are also creating a new class for exploitation, as it further abstracts life and blurs the boundaries between the living and the non-living, the subjects versus objects (tools)" (cf. "Life as a Raw Material: Illusions of Control", *Somatechnics* 2.2 (2012): 259-260). The justification for and criticality of such a bioaesthetics simply lies in the fact that "the engineering approach should not be allowed to monopolise life" (p. 260) and that the (economic) instrumentalisation of life and its 'zombification' as raw material will inevitably change what it means both to be human and animal (cf. Catts and Zurr, "Disembodied Livestock: The Promise of a Semi-Living Utopia", *Parallax* 19.1 (2013): 101-113. For an insightful overview and commentary see Allison Caruth, "Culturing Food: Bioart and In Vitro Meat", *Parallax* 19.1 (2013): 88-100. And for a reading of *Oryx and Crake* in terms of such a bioaesthetics see Slavomir Kozil, "Crake's aesthetic: Genetically

'Life after animals' can thus be said to be the logical precursor to 'life after people'. Both reveal our all-too-human obsession with our own passing, a kind of collective 'autothanatography', in which we, humans, are deceptively arguing ourselves out of the picture, out thus of responsibility.[82] However, even the most radical anti- or posthumanist thinking and imagining of the end of the human cannot help but imply at least a minimal from of subjectivity that would witness this passing (as Lyotard, in fact, reminded us).[83] In the end, there is always too much reassurance even in the worst (post-post-post-) apocalyptic scenario, regardless of how inhuman it might look. Even worse, there is almost something perversely and ghostly endearing.[84] Weisman's *The World Without Us* is quite a typical example of apocalyptic human 'self-indulgence': "Is it possible that, instead of heaving a huge biological sigh of relief, the world without us would miss us?"[85] Instead, having become suspicious of or somehow vaccinated against the standard humanist culture-media-serum, I am suggesting that a posthumanist reading of the novel and the biotech-biocapital practice it speculates on, for example in the form of in-vitro meat production,

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modified humans as a form of art in Margaret Atwood's *Oryx and Crake*", *Critique: Studies in Contemporary Fiction* 59.4 (2019): 492-508.

[82] Cf. my "'On not writing ourselves out of the picture…': An Interview with Stefan Herbrechter". *Antae* 1.3 (2014): 131-144. Available online at: https://www.um.edu.mt/library/oar/bitstream/123456789/12513/1/1-3-2014.1.pdf (accessed 31/10/2023).

[83] Jean-François Lyotard, *The Inhuman: Reflections of Time* [1988] (Cambridge: Polity Press, 1991); see also Marija Grech's *Spectrality and Survivance: Living the Anthropocene* (Lanham: Rowman & Littlefield, 2022), which explores precisely this unsurpassable 'anthropomorphism' of a 'world-without-us' scenario and its implications.

[84] *Oryx and Crake* is no exception here. What betrays Atwood's (and literature's) 'residual humanism' is the question of narration. Who narrates the postapocalyptic last man story and for whom? The narrative perspective is actually that of a 'spectrally surviving' omniscient narrator who moves between inside and outside Jimmy-Snowman's perspective. The crisis of 'literacy' as the main humanist taming technology is also highlighted in the novel, but of course has to remain unresolved: Jimmy asks himself whether his insights into the consequences of Crake's new world should be recorded, but the question is for whom, given that "the fate of these words [is] to be eaten by beetles" (p. 405). Of course, for the sake of literature's survival and for the benefit of the spectral (post/human) reader of the future Snowman does write down his notes anyway and addresses them "to whom it may concern" (p. 403). The novel even thematises Snowman's ultimate decision to stop writing (pp. 403-405) when he becomes aware of the "romantic optimism" that is involved in the self-indulgent belief of a (human) observer after the extinction event. In doing so, it goes as far as it possibly can, but, of course, this is where the author, Atwood, has to take over and continue writing anyway. Maybe this is how to understand the stubborn humanism she displays in justifying her writing of "ustopias":

> [O]f course we should try to make things better, insofar as it lies within our power. But we should probably not try to make things perfect, especially not ourselves, for that path leads to mass graves. We're stuck with us, imperfect as we are; but we should make the most of us. Which is about as far as I myself am prepared to go, in real life, along the road to ustopia. (Atwood, "Dire Cartographies", p. 95)

[85] Alan Weisman, *The World Without Us* (New York: St. Martins, 2007), p. 5. See also Brent Bellamy's and Imre Szeman's trenchant critique in "Life after People: Science Faction and Ecological Future", in: Gerry Canavan and Kim Stanley Robinson, eds., *Green Planets: Ecology and Science Fiction* (Middletown: Wesleyan University Press, 2014), pp. 192-205.

makes thinkable something that is even worse than a 'world without us', namely a world without animals – not least because, in the end, this would include us. It would concern *all* animals, both human and nonhuman.

There is no question, the animal is *en vogue* and animal studies are *de rigueur*. However, beyond the fashionable aspect there is another more poignant dimension to the question of why one should get interested in animals now? The obvious connections are, on the one hand, the ongoing and arguably accelerating physical disappearance of animals under the conditions of modernity even while animal exploitation and meat-eating overall are certainly not declining (something that Carol Adams already referred to as 'post-meat-eating' – the continuation of meat-eating after the 'referent' symbolically and also materially has disappeared).[86] In addition, the erosion of what is left of so-called 'natural habitats', the ongoing global environmental crisis, which has been hitting animals first, as well as the radical segregation between pets and other animals, as 'meat products' or exotic attractions, all play a part in this ongoing and accelerating disappearing process. On the other hand, maybe more cynically but also more radically, in times of genetic 'breeding', boundaries between human and animal, organic and inorganic, are eroding, questioning traditional 'purities' and provoking new utopias of hybridity and anxieties of miscegenation. This has been Donna Haraway's argument ever since her "Cyborg Manifesto".[87]

However, I hope it is not too late to contradict Rosi Braidotti when she says that: "the animal has ceased to be one of the privileged terms that indexes the European subject's relation to otherness",[88] because without nonhuman animal others humans would be, in fact, "becoming animal" (but not in the sense Deleuze and Guattari desired), or "human-animaloid hybrids", as Braidotti says.[89] They would simply be threatened with the same disappearance, the same 'zombification', as (nonhuman animals). In view of this post-postapocalyptic scenario, let me end with Jocelyn Porcher's damning verdict of in vitro meat, to complete so to speak, the circle of life-death:

> La différence entre la viande issue d'un animal et la viande *in vitro*, c'est précisément cela: la vie. Entre les animaux et nous, la vie circule. La vie et la mort sont données. Nous savons d'où vient notre énergie vivante : elle vient de cette incorporation de la vie par la mort donnée. Dans le cas de la viande *in vitro*, il n'y a pas de mort, mais il n'y a pas non plus de vie. Il n'y a rien qui circule. Pas de vie, pas de mort, pas de don. Du mort-vivant.[90]

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[86] Carol J. Adams, *The Sexual Politics of Meat: A Feminist Vegetarian Critical Theory* (Cambridge: Polity, 1990).

[87] Cf. Haraway, "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century [1985]", in: *Simians, Cyborgs and Women: The Reinvention of Nature* (New York: Routledge, 1991), pp. 149-181.

[88] Braidotti, "Animals, Anomalies, and Inorganic Others", *PMLA* 124.2 (2020): 526.

[89] *Ibid*.

[90] Porcher, *Vivre avec les animaux*, p. 126 (The difference between meat from an animal and in vitro meat is precisely that: life. Between animals and us, life circulates. Life and death are given. We know where our living energy comes from: it comes from this incorporation of life through giving death. In the case of in vitro meat, there is no death, but there is no life either. Nothing circulates. No life, no death, no gift. Living-dead.)