

The Living Image in Bio-Art and in Philosophy

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Two Images

The central piece of Eduardo Kac's project *Natural History of the Enigma* (2003–08) is a genetically modified, living artwork: a transgenic petunia (Fig. 1). The pinkish flower might first appear to be a pleasant, unthreatening, even mundane representative of its species, familiar from window boxes and suburban gardens. Only once we are informed of the flower's provenance does it acquire an uncanny quality. The flower has been produced by introducing a gene, extracted from Kac's blood sample, into the plant's DNA. Kac's gene has been modified to express itself as the blood-red, vein-like pattern on the petunia's bloom. The genetically modified flower thereby presents us with a living image of blood-filled veins on pinkish human skin, and it is on this vision that we are invited to reflect.

Consider now an image of a different sort, one conjured by a text rather than by living matter. In a paper entitled 'Genetically Modified Animals: Should There Be Limits to Engineering the Animal Kingdom?' (2011), philosopher Julian Savulescu asks us to imagine the following:

Imagine we were to create a human-chimp chimera by fusing human embryonic cells with chimp embryonic cells. How should we evaluate this act in terms of the kind of life that the resultant chimera would lead? Should its life be compared to that of a human, or chimp, or both? [...] Imagine that the biology of a human-chimp chimera causes it to become depressed, or to experience some other persistent negative mental state [...] If the adverse experiences were sufficiently profound, say constant terror from hallucinations (as occur with ketamine use) or severe pain, the biological conditions might render the [animal's] life so bad that it is not worth living. It clearly would be unethical to create such animals.¹

In the paper, Savulescu investigates the ethics of creating genetically modified animals. The creation of a human-chimp chimera – the technical term for an animal produced by fusing tissues of the two species – would potentially be one of the most controversial yet. However, creating such animals would be highly beneficial for research on brain disease, and, the argument goes, unless the experience of such animals were as horrifying as described here, it should be permissible to create them. I will attend to Savulescu's argument in due course; for now, I only wish to draw attention to the role of the imagined creature in such arguments. Is it possible to philosophise without vividly imagining such a creature, without mentally filling in the details – its cage, its companions, its food, its routine, its surroundings, its mental health – without, in other words, conjuring up an image?

Bioethics and bio-art, while methodologically entirely separate fields, both attempt to critically examine advancements made in biotechnology. The two images just considered – one created from biological matter, the other merely imagined – are representative of each field. To call each of these artefacts an

1. Julian Savulescu, 'Genetically Modified Animals: Should There Be Limits to Engineering the Animal Kingdom?', in Tom L. Beauchamp and R.G. Frey (eds), *The Oxford Handbook of Animal Ethics* (Oxford: Oxford University Press, 2011, digital edn), pp. 641–65 and 656–7.



Fig. 1. Eduardo Kac, *Natural History of the Enigma* (2003–08), transgenic flower with the artist's DNA expressed in the red veins. Installation image from 13 April to 21 June 2009. Weisman Art Museum, Minneapolis, MN. (Photo: Weisman Art Museum)

2. The account of images as 'seeing-in', that is, simultaneously perceiving the depicted scene and the physical support of the medium, originated with Richard Wollheim. Richard Wollheim, *Painting as an Art* (London: Thames and Hudson, 1987), pp. 46–59.

3. Cited in Caroline van Eck, *Art, Agency, and Living Presence: From the Animated Image to the Excessive Object* (Munich and Leiden: Walter De Gruyter/Leiden University Press, 2015), p. 34.

'image', of course, broaches the long-contested issue of what images are. Certainly, neither artefact is a *picture* in the paradigmatic sense: neither is a case of seeing a perceived scene in a medium like oil on canvas or photographic film.² With Kac's *Natural History of the Enigma*, we have, of course, the photographs of the petunia, but the image that preoccupies us here is the living image on the flower itself, the image of human blood, appearing on the bloom. As with the 'eyes' seen in the wings of a butterfly, this is a living image in the sense of it being produced by biological matter; curiously, though, this 'natural' image is also a product of human design. Savulescu's human-chimp chimera, on the other hand, is what we might instead call a mental image, one occasioned by a textual, rather than a visual, prompt. Still, with such philosophical thought experiments, just as with pictorial representations, our imaginative response to them constitutes their rhetorical power.

Historically, the rhetorical use of images has been the common ground where philosophy and visual art collide. A useful notion here is *enargeia* (vividness), analysed by Caroline van Eck in her account of classical rhetoric and its influence on European visual culture. As conceived by classical authors, *enargeia* is the conjuring of images in the mental eye of the audience; as Quintilian describes it, 'we seem to show what happened rather than tell it; and this gives rise to the same emotions as if we were present'.³ Such notions, Van Eck contends, became foundational for the early modern understanding of painterly and sculptural forms of persuasion. That is, if persuasion is the

attempt to win the audience over to the speaker's point of view, then we may understand specifically visual forms of persuasion as the attempt to instil in the viewer certain emotions or beliefs, by means of leading the audience to imagine themselves present at the scene depicted.⁴ Ranging across the period – from the weeping Madonnas of Renaissance sacral art, to the feeling of flesh (*le sentiment de la chair*) in seventeenth- and eighteenth-century writing on sculpture – Van Eck's argument demonstrates that evoking a living presence was central to the thought that art, like writing, could aim to persuade and educate.⁵

As the examples of Kac and Savulescu show, we may find clear echoes of such evocative persuasion in contemporary philosophy and bio-art. Technological change, however, introduces different terms to the debate. Here we enter the era of what we might call, loosely following W.J.T. Mitchell, a 'biopicture': 'the fusion of the older "spectral" life of images (the uncanny, the ghostly) with a new form of technical life, epitomized by the contemporary phenomenon of cloning and the development of digital imaging and animation'.⁶ While Mitchell, writing in 2011, discusses the computer-animated images of the film *Jurassic Park* under this category, the term might also capture the ways in which Kac's *Natural History* fuses the 'spectral' image of blood with biological matter. These developments invite us to reflect anew on the rhetorical evocations of living matter in visual art, and to consider what happens to rhetoric when artistic images become in this way incarnate.

My investigation proceeds in two parts. I begin by situating bio-art of the 2000s within its historical moment, especially within the broader media discourse surrounding biotechnology at the time. The wider context of biotechnology imagery – within grassroots activism, sensationalist reporting, and 'viral' Internet memes – complicates any simple divisions that might be drawn between the living artworks and their mimetic representations. Critical thought about biotechnology since the 2000s, I argue, therefore acquires a very specific aim: to help us understand what is at stake in the technological modification of life in a way that moves beyond the spectacular representation of technological change in mass media. In the second part, I return to the comparison between art and philosophy, and offer further theoretical reflections on the notion of the 'living image'. Creating living but pensive images – a notion I shape by considering the work of art historians Hanneke Grootenboer and Caroline van Eck, and the philosopher Cora Diamond – may be a position that contemporary bio-art can successfully claim as its own rhetorical mode, returning to living images a complexity that more abstract philosophical rhetoric denies it.

Living Presence and Living Images: The Viral Reception of Bio-Art

By the time of Kac's *Natural History of the Enigma* – the first tests were made in 2003 and the work was first exhibited in 2008 – bio-art was well past the point of novelty. Since the early 1990s a new direction emerged within contemporary art resulting from the accelerated intertwining of the visual arts with the laboratory-based sciences. This flurry of activity has been variously referred to as sci-art, genetic art, hybrid art, transgenic art, or bio-art, denoting the work of artists closely involved in some scientific area of study, usually biotechnology.⁷ While some implausibly early historical starting points have been suggested for bio-art,⁸ a distinct beginning may in fact be observed in artistic activity of the 1990s, coinciding with significant technological developments of the decade. The Human Genome Project was announced in 1990; Herman the Bull, a bovine modified with a human gene was born that same

4. Caroline van Eck, *Classical Rhetoric and the Visual Arts in Early Modern Europe* (Cambridge: Cambridge University Press, 2007), pp. 8–9.

5. Van Eck, *Art, Agency and Living Presence*, pp. 39–43, 53–66; Van Eck, *Classical Rhetoric*, pp. 56–85.

6. W.J.T. Mitchell, *Cloning Terror: The War of Images, 9/11 to the Present* (Chicago: Chicago University Press, 2011), p. 73.

7. For overviews of bio-art, see Suzanne Anker and Dorothy Nelkin, *The Molecular Gaze: Art in the Genetic Age* (Cold Spring Harbor, NY: Cold Spring Harbor Laboratory Press, 2004); Sian Ede, *Art and Science* (London: I.B. Tauris, 2005); Frances Stracey, 'Bio-art: The Ethics Behind the Aesthetics', *Nature Reviews Molecular Cell Biology*, 10/7 (2009), pp. 496–500; Ingeborg Reichle, *Art in the Age of Technoscience* (New York: Springer, 2009); Robert Mitchell, *Bioart and the Vitality of Media* (Seattle: University of Washington Press, 2010).

8. One persistent red herring is Edward Steichen's 1936 exhibition of cross-bred delphinium flowers at the Museum of Modern Art in New York, which several authors hail as the beginning of bio-art. See Anker and Nelkin, *Molecular Gaze*, p. 66; Stracey, 'Bio-art', p. 496; Reichle, *Art in the Age of Technoscience*, pp. 63–5; R. Mitchell, *Bioart*, pp. 36ff. While Steichen's flowers were indeed cross-bred (as is the case with most flower shows), I could unearth no trace of either Steichen or MoMA associating this process with transgenic themes that dominate bio-art. The exhibition appears to have been a conventional flower show, which MoMA put on for a week to indulge the already well-known photographer's hobby horse. The misconception might have its origins in George Gessert, 'Notes on Genetic Art', *Leonardo*, 26/3 (1993), pp. 205–11.

9. Karl Gerbel and Peter Weibel, *Genetische Kunst – Künstliches Leben*. *Ars Electronica* catalogue (Wien: PVS-Verleger, 1993).

10. MoMA holds one computer artwork by Kac, and the Tate holds three; however, neither museum possesses works of bio-art by him or by other artists and neither museum has held any exhibitions on the theme of bio-art. *Artforum*'s searchable archive includes twelve entries for Stelarc, seven for Kac, and fewer or none for other bio-artists. None of these entries is a stand-alone review (by comparison with "mainstream" artists, Marc Quinn has received 45 mentions, Camille Henrot 68, Marina Abramović 282). One page-long article in *Artforum* discussed bio-art as a discrete phenomenon: Steven Shaviro, 'Genetic Disorder: Steven Shaviro on Bioaesthetics', *Artforum*, 42/5 (January 2004), p. 42.

11. Eduardo Kac (ed.), *Signs of Life: Bio Art and Beyond* (Cambridge, MA: MIT Press, 2007), p. 164. Original emphasis.

12. Eduardo Kac, 'GFP Bunny', *Leonardo*, 36/2 (2003), pp. 97–102.

year; genetically modified crops became widespread in the United States and China by the mid-1990s; Dolly the Sheep was cloned in 1996. These developments presented the artists with a new set of themes to respond to, but crucially, they also provided new techniques and media for artists to use.

The first exhibitions thematising artists' collaboration with scientists began to appear in the early 1990s; for example, the 1993 *Ars Electronica* exhibition, *Genetische Kunst/Künstliches Leben* (Genetic Art/Artificial Life) consisted of several artistic representations of biotechnological processes.⁹ By the mid-1990s to early 2000s, however, there was a clear emergence of *laboratory-based* bio-art – art that endeavoured to use biotechnology as a means of expression – and it is in this sense that I will use the term 'bio-art' here. The genre was pioneered through academic residencies, such as Oron Catts and Ionat Zurr's residency at the Harvard Medical School (*The Tissue Culture and Art Project*, 2000–01), the first project to incorporate artificially grown tissue into miniature artworks. Techniques used by other bio-artists of the period have included, for example, body modifications, citizen science projects, scarring of animal tissues, and synthetic (bacterial) DNA coding. In addition to the works of Kac, Catts and Zurr, the work of Joe Davis, Beatriz da Costa, the Critical Art Ensemble, Stelarc, Natalie Jeremijenko, Marta de Menezes, Paul Vanouse, and others is representative here. By the end of the 2000s, such laboratory-based bio-art production was commonplace enough for *Ars Electronica*, the European festival of arts and technology, to introduce the 'Hybrid Art' category, which has been mostly awarded to bio-artists. During this period, bio-art also developed its own, specialised institutional network – such as the now-defunct Sciart funding stream from the Wellcome Trust in the UK, and the establishment of the bio-art laboratory SymbioticA at the University of Western Australia – while remaining relatively peripheral to the mainstream artworld of museums such as MoMA, the Tate, or the Guggenheim and publications like *Artforum*.¹⁰

Laboratory-based bio-artists have considered their access to biotechnology as a crucial component of their critical stance towards new scientific developments. Eduardo Kac has described his work in these terms:

As both utopian and dystopian artists such as Moholy-Nagy and Tinguely have done before, in my work I appropriate and subvert contemporary technologies – not to make detached comments on social change, but to *enact* critical views, to make present in the physical world invented new entities (artworks that include transgenic organisms) which seek to open a new space for both emotional and intellectual aesthetic experience.¹¹

What emerged from such 'enactment' of critical views, as opposed to mere commentary, can best be observed in what is Kac's most notorious work, *GFP Bunny* (2000) (Fig. 2). According to Kac's report of the events, *GFP Bunny* included the creation of a genetically modified albino rabbit, named Alba, in collaboration with scientists at the National Institute for Agricultural Research in France. Alba was created by inserting a modified gene into a rabbit embryo. The source of the gene is originally found in a species of jellyfish, and it codes for the expression of a green fluorescent protein (GFP). Therefore, if illuminated with an ultraviolet light and viewed through a filter, Alba would appear to be glowing with a green light (Fig. 3).¹² Kac originally intended to show the rabbit in June 2000 at the *AVIGNONumérique* exhibition in Avignon; however, the scientists who created the rabbit withdrew their participation from the project and refused to release the animal. Kac then relayed the story to the public, and it was soon picked up by several international news outlets. In the following years, Kac engaged in public interventions and panel

appearances, campaigning for Alba's 'return' to the artist, and for her to be cared for in his family home. Accordingly, Kac has insisted that *GFP Bunny* comprises not only the creation of the rabbit, but also the resultant public dialogue, which such a radical artwork – an animal genetically modified for art – could not fail but provoke.¹³ As W.J.T. Mitchell sums up in relation to Kac's opus, '[p]erhaps the most disturbing and provocative sort of biocybernetic art [...] is work that does not attempt to represent the genetic revolution but instead participates in it.'¹⁴

Kac's and Mitchell's emphasis on *actuality* – on the physical, biotechnological change involved – reflects the dominant tenor of critical discussions around bio-art. The participation of bio-artists in the biotechnological revolution has, for example, led to objections along ethical lines. The artist Claire Pentecost noted the death of many previous test subjects, which the eventual creation of Alba must have inevitably entailed;¹⁵ art historian Frances Stracey warned of the potential toxicity of fluorescent molecules in GFP animals;¹⁶ law professor Henry T. Greely was prompted by *GFP Bunny* to voice an objection to bio-art in general, on the grounds that entertainment can never legitimise procedures as drastic as genetic manipulation.¹⁷ On the other hand, proponents of bio-art have suggested that this proximity to actual biotechnology – its ethical risks included – allows bio-artists to engender modes of understanding that are unavailable to more detached commentators. In relation to *GFP Bunny*, for instance, artist and scholar Steve Baker posited that it is the rabbit's 'sheer *being-there* [that] is arguably its real strength as an artwork'.¹⁸ In terms of Baker's analysis, Alba has no utility from the standpoint of science, but its existence forces us to discuss the alterity of transgenic organisms with an urgency that a mere thought experiment could never engender. Artists Oron Catts and Ionat Zurr seem to concur with this view when they write that 'being in the lab is akin to going to the slaughterhouse rather than to the supermarket to obtain beef'; the bio-artist, being involved first hand in the process of biotechnological change, possesses a degree of insight that members of the general public, as the mere recipients of such change, do not.¹⁹ The internal report of the Wellcome Trust, who as a major sponsor in the UK sponsored 118 collaborations between artists and scientists between 1996 and 2006, described artists as 'pseudo-"public representatives" in what might otherwise remain hermetic sanctums of knowledge'.²⁰ This thought is easily applicable to a work like *GFP Bunny*, which, we might likewise contend, made the public aware of the practice of genetically modifying animals, which they otherwise might not have known about. The scholar Robert Mitchell has drawn on affect theory to praise the hands-on aspect of bio-art, extolling participatory bio-art projects, where members of the public 'occupy the position of experimenter rather than to function simply as donor (of tax money and materials) or consumer'.²¹ Even when the work is not participatory, Mitchell writes, 'simply learning that such a project is "out there somewhere" can produce a sort of adrenalised, excited concern (or even crisis) on the part of some who reads or hears about this project'.²²

We may then sum up such arguments both for and against bio-art as relying on the premise that it is bio-art's actuality – its status as *real* bioengineering of *real* living beings – that singles out bio-art as the vehicle through which to scrutinise biotechnological change. However, we would do well to question this premise. After all, *non-artistic* forms of bioengineering modify living beings that are just as real as those modified by bio-art. By the time of Alba's creation, for example, GFP-genetic modification of animals was by no means unusual. In that same year, 2000, a group of scientists created a GFP-modified monkey, while GFP-modified pet fish became commercially available in the United States in



Fig. 2. Eduardo Kac, *GFP Bunny*, Kac with Alba (2000).



Fig. 3. Eduardo Kac, *GFP Bunny* (2000), photographic representation of the rabbit.

13. Kac, 'GFP Bunny', p. 97. For a list of Kac's art projects associated with *GFP Bunny* see <http://www.ekac.org/gfpbunny.html> (accessed 10 August 2017).

14. W.J.T. Mitchell, *What Do Pictures Want?: The Lives and Loves of Images* (Chicago: University of Chicago Press, 2005), p. 327.

15. Claire Pentecost, 'Outfitting the Laboratory of the Symbolic: Toward a Critical Inventory of Bioart', in Beatriz Da Costa and Kavita Philip (eds), *Tactical Biopolitics: Art, Activism, and Technoscience* (Cambridge, MA: MIT Press, 2008), pp. 107–25 at 116–18.

16. Stracey, 'Bio-art', p. 499.

17. Henry T. Greely, 'Human/Nonhuman Chimeras: Assessing the Issues', in Tom L. Beauchamp and R.G. Frey (eds), *The Oxford*

Handbook of Animal Ethics (Oxford: Oxford University Press, 2011, digital edn).

18. Steve Baker, *Artist/Animal* (Minneapolis: Minnesota Press, 2013), p. 74. See also pp. 82–3.

19. Oron Catts and Ionat 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, MA: MIT Press, 2008), pp. 125–42 at 138.

20. Paul Glinkowski and Anne Bamford, *Insight and Exchange: An Evaluation of the Wellcome Trust's Sciart Programme* (London: Wellcome Trust, 2009), p. 65.

21. R. Mitchell, *Bioart*, p. 65.

22. R. Mitchell, *Bioart*, p. 72. See also pp. 31–4, 60–5.

23. A.W.S. Chan *et al.*, 'Transgenic Monkeys Produced by Retroviral Gene Transfer into Mature Oocytes', *Science*, 291 (2001), pp. 309–12. GloFish website, www.glofish.com (accessed 20 April 2019).

24. For more examples see Vid Simoniti, 'Artistic Research at the Edge of Science', *OAR: The Oxford Artistic and Practice Based Research Platform*, 1/1 (2017), <http://www.oarplatform.com/artistic-research-edge-science/> (accessed 11 July 2019).

25. The revelation and subsequent public scandal unfolded in November 2018; as of March 2019, the alleged genetic modification has not been conclusively verified. David Cyranoski, 'What's Next for CRISPR Babies?', *Nature*, 566 (28 February 2019), pp. 440–2; Megan Allyse *et al.*, 'What Do We Do Now?: Responding to Claims of Germline Gene Editing in Humans', *Genetics in Medicine* (published online 27 March 2019, accessed 26 April 2019, DOI: 10.1038/s41436-019-0492-3).

26. Several scholarly accounts are beholden to Kac's version of events: Ede, *Art and Science*, p. 156; Baker, *Artist/Animal*, pp. 81–9; W.J.T. Mitchell, *What Do Pictures Want?*, p. 327; Jane Blocker, *Seeing Witness: Visuality and the Ethics of Testimony* (Minneapolis: University of Minnesota Press, 2009), pp. 98–102. Claire Pentecost is more critical of Kac's version of events (Pentecost, 'Outfitting the Laboratory'). The most detailed investigation of the dispute, however, is presented in two *Wired* magazine articles: Christopher Dickey, 'I Love My Glowing Bunny', *Wired*, 9/4 (April 2001); Kristen Philipkoski, 'RIP Alba, the Glowing Bunny', *Wired News*, August 2002. Houdebine has voiced his view in various comments on online forums. For example: a comment left by "Louis-Marie

2003.²³ Since the 1990s (non-art) laboratories of universities and biomedical corporations have produced cloned sheep, goats with spider silk in their milk, rice that yields human proteins, laboratory-created bovine flesh, and a whole host of fluorescent creatures.²⁴ Such biotechnological developments take place on a scale and with budgets that far exceed bio-art, and in ways that are not always transparent to public scrutiny; therefore, it is such developments that appear to be the proper object of public ethical concern, rather than the comparatively small-scale bio-art interventions. As of 2019, for example, what bio-artwork can compete for ethical attention – if 'compete' is not too distasteful a word to use here – with the sheer 'being-there' of Lulu and Nana, allegedly the first genetically modified humans who were secretly created in China in 2018 by the rogue scientist He Jiankui?²⁵

In short, if we are looking for outrageous, exciting, or unusual forms of biotechnology to galvanise ethical scrutiny, bio-art hardly seems to stand apart from non-artistic forms of bioengineering. To describe what is distinctive about bio-art, one must do more than point at the actuality of these artworks, at the fact that they, too, constitute biotechnological change. I contend that the distinction that needs to be drawn here is between merely knowing that something exists, and being confronted with that something *as* a living presence. The art-historical examples of weeping Madonnas or of animated sculpture, mentioned in the previous section, might point towards that distinction. However, before substantiating the suggestion that bio-art might be able to engender just such a sense of a living presence (as opposed to merely engendering the knowledge that something exists), we must first show that representations of biotechnology can also do the opposite. They can also create distance by emptying a living being of its particularity.

The image used to represent *GFP Bunny* is useful to consider here (Fig. 3). According to Kac, the rabbit was created for artistic purposes, but it is worth noting that the lead scientist in the case, Louis-Marie Houdebine, disputed the story. According to Houdebine, the laboratory had been routinely producing GFP-modified rabbits since 1998, and Kac only attempted to borrow one for the show. In addition, Houdebine and others have questioned the authenticity of the image, pointing out that the GFP gene would be expressed in the skin and would not produce such a uniform glow in the fur.²⁶ Whichever version of the events we go with, however, it is certain that it was this particular image that fuelled the public outcry.

The image – allegedly a photograph taken under UV light – shows a green-glowing apparition, materialised against a neutral white background, immediately suggestive of aliens, radioactivity, and madcap experiments. The image is 'iconic', to use art historian Martin Kemp's phrase, or, to put it in marketing jargon, such an image 'reads well'. As with the *Mona Lisa* or a Coca-Cola bottle, the green rabbit meets many of Kemp's criteria of iconicity: a flexible set of associations, emotional engagement, a measure of symmetry, simplicity of the main subject, tonal and colouristic clarity, robustness in the face of degraded reproduction, being easily replicated, and being recognisable in fragmentary form.²⁷ We may be reminded here, also, of Roland Barthes' assertion, formed in relation to an illustrated magazine of the 1950s, that 'myth prefers to work with poor, incomplete images, where the meaning is already relieved of its fat, and ready for a signification, such as caricatures, pastiches, symbols, etc.'²⁸ Whether we call them 'iconic' or 'poor', images like that of a glowing rabbit are then marked by being both highly recognisable and highly malleable, easily absorbing the meanings suggested by the surrounding context. In our case, even the white background makes the image especially suitable for encasing the body

of the rabbit within a surrounding text, as can be seen in some newspapers' usage of the image (Figs 4 and 5). Indeed, the attending coverage was sensationalist: the *Boston Globe* opted for the punning title 'Cross Hare: Hop and Glow; Mutant bunny at heart of controversy over DNA tampering', while the *Washington Post* story was called 'It's Not Easy Being Green' and the story ran in their style section.²⁹ Later, the image went viral, and was referenced in popular culture ranging from the TV show *The Big Bang Theory* to Internet memes.³⁰

The sensationalist image of the glowing rabbit had clear precedents. The most infamous of these was perhaps the Vacanti mouse, a laboratory mouse that had ear-shaped cartilage grafted onto its back to test techniques for supporting artificially grown tissue; the findings contributed to advances in reconstructive surgery in humans.³¹ When the image was released in 1997 it came to circulate via email and became an early Internet sensation (Fig. 6). The false preconception that the mouse had been genetically engineered, and the ear 'grown', was repeated both by the media (e.g. the BBC) and by anti-bioengineering activists.³² The 'earmouse' became a visual byword for biotechnological controversy, featuring, for example, in Alexis Rockman's dystopian painting *Farm* (2000) (Figs 7 and 8). Another good example of such an image was that of a tomato-fish 'hybrid', used by anti-GMO protestors to suggest that tomatoes with fish genes are being served to customers (Fig. 9). This visual idea, replicated in many variants in Internet imagery and printed protest ephemera, may have been the result of conflating two famous genetically modified tomatoes: Calgene's Flavr Savr, which was indeed available to American customers in 1994–97 but only used genes from other tomatoes, and a prototype Monsanto tomato, which did contain flounder genes, but never reached the market.³³ In all these cases, the legibility and recognisability of each image seem to have contributed to the increasing obfuscation of the underlying biotechnological facts.

'Viral' is the most appropriate term to synthesise these remarks on the behaviour of images such as the glowing rabbit, earmouse, and the fish-tomato. Produced in the early 2000s, these images precede the online-based visual economy of today; they were circulated as email attachments, newspaper imagery or activist posters, rather than shared via social media like Twitter, Facebook, YouTube, or 4chan. Nevertheless, we may already apply to them some of the terms now more familiar in relation to the new media landscape of Web 2.0. As well as 'viral' images, 'meme' is another relevant quasi-biological concept here. Coined by Richard Dawkins, in his 1973 *The Selfish Gene*, to denote any unit of culture that successfully proliferates, it has more recently come to be used almost exclusively in relation to online digital objects, which are co-constructed and shared by many anonymous users.³⁴ W.J.T. Mitchell has introduced the rich term 'biopicture', which he uses ambiguously to mean both pictures that depict advances of bioengineering (as mentioned above, his example is a still from *Jurassic Park*) and pictures that have 'the viral, indestructible character of an image that is "on the loose," refusing to go away, and [an] ability to show up anywhere, anytime'.³⁵ More recently, Hito Steyerl's usage of the term 'poor image' is also broadly applicable.³⁶ Steyerl gives the term a more specific gloss than Barthes; for her, 'poor image' refers primarily to low-resolution, degraded, compressed images, such as GIFs or cheaply reproduced covers of pirated DVDs. Her emphasis on the speed and malleability with which poor images circulate, however, surely captures the behaviour of Kac's glowing rabbit as well. Indeed, if we were to describe the means by which the rabbit, the earmouse, and the fish-tomato proliferated – the way by which, for example, the earmouse could find its way to an Alexis Rockman painting or how the fish-tomato was reincarnated at a festival – we might also use, anachronistically,



Fig. 4. Eduardo Kac, *Free Alba!* (2001–02), colour photographs showing newspaper coverage of *GFP Bunny* (*New York Times*), mounted on aluminium with Plexiglas, 91.4 × 118 cm.



Fig. 5. Eduardo Kac, *Free Alba!* (2001–02), colour photographs showing newspaper coverage of *GFP Bunny* (*Boston Sunday Globe*), mounted on aluminium with Plexiglas, 91.4 × 118 cm.

Houdebine", dated 13 August 2008, and authenticated by the site administrator on 'Louis-Marie Houdebine et la controverse d'Alba : une transgénèse aux aspects douteux', *Agoravox.fr*, <http://www.agoravox.fr/actualites/technologies/article/louis-marie-houdebine-et-la-43125> (accessed 26 April 2019).

27. Martin Kemp, *Christ to Coke: How Image Becomes Icon* (Oxford: Oxford University Press, 2012), pp. 352–3.

28. Roland Barthes, *Mythologies*, trans. Annette Lavers (New York: The Noonday Press, 1991), p. 125.

29. Libby Copeland, 'It's Not Easy Being Green', *Washington Post*, 18 October 2000, p. C01. On media reception of *GFP Bunny* see also Pentecost, 'Outfitting the Laboratory', p. 118.

30. Kac himself has gathered some of these responses in various artworks, recently in an exhibition "... and the Bunny Goes POP!" (Horse Hospital, London, 2018).

31. Yilin Cao *et al.*, 'Transplantation of Chondrocytes Utilizing a Polymer-Cell Construct to Produce Tissue-Engineered Cartilage in the Shape of a Human Ear', *Plastic and Reconstructive Surgery*, 100/2 (1997), pp. 297–304.

32. Turning Point Project, 'Who Plays God in the 21st Century?' (advert), *New York Times*, 25 May 2001, p. 62; Anonymous, 'Girl may be first to grow artificial ear', *BBC News*, 13 April 1998, <http://news.bbc.co.uk/2/hi/science/nature/77764.stm> (accessed 11 August 2017); Anonymous, 'Artificial Liver "could be grown"', *BBC News*, 25 April 2002, <http://news.bbc.co.uk/2/hi/health/1949073.stm> (accessed 21 August 2017).

33. For the tomato controversy, see Jennie Addario, 'Horror Show', *Ryerson Review of Journalism*, Spring 2002, <http://rrj.ca/horror-show/> (accessed 11 August 2017). For a scholarly analysis of the rhetoric of GM foods, see Hugh Gusterson, 'Decoding the Debate on "Frankenfood"', in Betsy Hartmann, Banu Subramaniam, and Charles Zerner (eds), *Making Threats: Biofears and Environmental Anxieties* (Lanham: Rowan & Littlefield, 2005), pp. 109–33.

34. See, for example, Limor Shifman, *Memes in Digital Culture* (Cambridge, MA: MIT Press, 2013).

35. W.J.T. Mitchell, *Cloning Terror*, p. 101. See also pp. 71–3, 101–3. Occasionally, Mitchell uses the term 'biodigital picture', but the two terms seem to be interchangeable.

36. Hito Steyerl, 'In Defense of the Poor Image', *e-flux*, 10 (November 2009).

37. Lev Manovich, *The Language of New Media* (Cambridge, MA: MIT Press, 2002), pp. 121–6, 136–41; Mark Deuze, 'Participation, Remediation, Bricolage: Considering Principal Components of a Digital Culture', *The Information Society*, 22 (2006), pp. 63–75.

38. For some further reflections on how science and technology interact in this context, see Steven Best and Douglas Kellner, *The Postmodern Adventure: Science, Technology, and Cultural Studies*

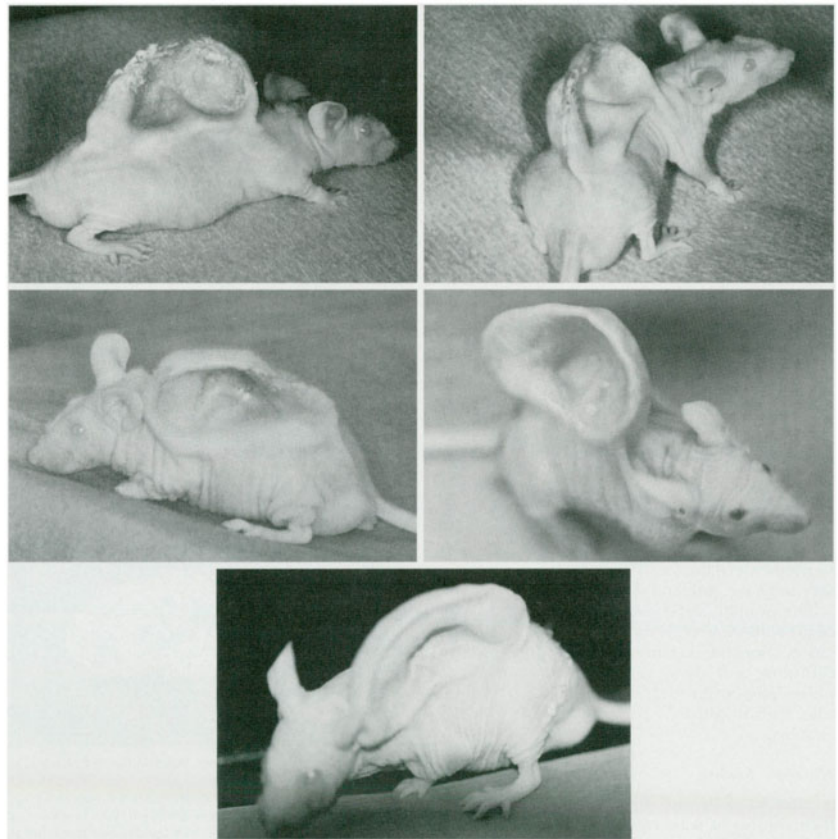


Fig. 6. The 'Vacanti mouse' images as they originally appeared in the published paper. © Lippincott Williams & Wilkins.

some of the terms developed by new media theorists in the early-to-mid 2000s with regard to digital uses of images, such as Lev Manovich's analysis of selection and compositing, or Mark Deuze's emphasis on participation, remediation, and bricolage.³⁷

In short, combining malleability, legibility, replicability, and lack of complexity, the GFP bunny, the earmouse, and the fish-tomato anticipated the subsequent digital and Internet-borne chapter of the late capitalist image spectacle.³⁸ While the critical terms adopted by Mitchell, Steyerl, Manovich, and Deuze, among others, offer many routes of analysis here, I stress the 'viral' metaphor especially, because viruses are traditionally seen as *not living*. Viral spreading depends entirely on host cells, and viruses do not themselves exhibit signs of life like metabolism or growth. Similarly, images of the glowing rabbit, the earmouse, and the fish-tomato have no 'life of their own', in the sense that they become untethered from the *particulars* of a life that they depict. It is important here not to make a blanket negative judgement of viral images, however. One of Mitchell's examples of a 'biopicture' is the image of the Abu Ghraib prisoner, which became a potent symbol of the excesses of the 2003 American invasion of Iraq;³⁹ Steyerl likewise emphasises that '[i]n addition to a lot of confusion and stupefaction, [the circulation of poor images] also possibly creates disruptive movements of thought and affect'.⁴⁰ However, apropos the theoretical insistence that the *actuality* of bio-art puts it in a privileged critical position, that insistence begins to look rather naïve, once we consider the



Fig. 7. Alexis Rockman, *The Farm* (2000), oil and acrylic on wood panel, 244 × 305 cm. Collection: The Joy of Giving Something.

broader context of the contemporary image economy. It is within such economy that bio-art must exist; and any biotechnological intervention therefore risks becoming not a contemplation of a particular life, but another spectre, another viral image.

Examples drawn from two other sophisticated bio-artists may show how the context of viral images may drain bio-artworks of their critical potential. For his *Ear on Arm* (2006), Stelarc had ear-shaped tissue created, which was then grafted onto his forearm, together with a microphone and a transmitter, which enabled Stelarc to transmit what the ear ‘hears’ over the Internet.⁴¹ As with several other of Stelarc’s works, the act can be seen as part of a larger discourse on post-humanism, and is accompanied by a series of poetic performances (Fig. 10). Indeed, Stelarc’s body-modifying practice, underway since the early 1980s, can be seen as an artistic parallel to Donna Haraway’s trajectory in the critical theory of science, as an attempt to breach the distinction between humans and machines with a view of generating utopian potentialities.⁴² Maja Smrekar’s recent opus, *K-9_topology* (2014–17), on the other hand, performatively traced the millennia of joint evolution between dog and human (Fig. 11). As meditations on motherhood, mortality, and fraught planetary co-existence of different species, Smrekar’s carefully choreographed performances have often involved animals – in this series, dogs and wolves – as well as certain biomedical procedures, such as subjecting herself to ovum extraction.

And yet, the nuances of Stelarc’s and Smrekar’s works were to an extent compromised by the viral images that were their byproducts. One photograph for *Ear on Arm* showed Stelarc emerging from darkness like Frankenstein’s monster with the bulbous ear growing out of his arm (Fig. 12); for *K-9_topology*, a press image shows Smrekar posing with a wolfdog, but wearing curious yellow contact lenses, as if the artist herself is a wolf-human hybrid

at the *Third Millennium* (New York: The Guilford Press, 2001).

39. W.J.T. Mitchell, *Cloning Terror*, pp. 99–109.

40. Hito Steyerl, ‘In Defense of the Poor Image’, section 6.

41. Anonymous, ‘Stelarc: Ear on Arm’, *Prix Ars Electronica Archive*, 2007, <http://archive.aec.at/submission/2010/HA/19658/> (accessed 10 September 2017).

42. Donna J Haraway, ‘A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century’, in *Manifestly Haraway* (Minneapolis: University of Minnesota Press, 2016), 3–90. See also N. Katharine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature and Informatics* (Chicago: University of Chicago Press, 1999).



Fig. 8. Alexis Rockman, *The Farm* (detail).

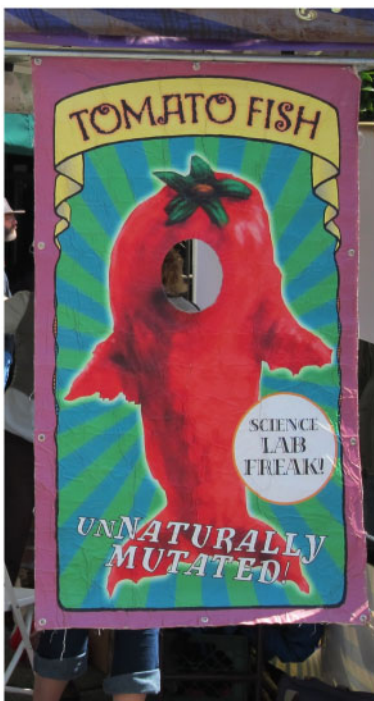


Fig. 9. The GMO Freak Show stands on the Sustainable Living Roadshow tour in 2011. The SLR are activists who travel the United States campaigning on environmental issues. (Photo: Eliza van Gerbig)

43. E.g. Anonymous, 'Performer gets third ear for art', *BBC News*, 11 October 2007, <http://news.bbc.co.uk/1/hi/health/7039821.stm> (accessed 10 August 2017).

44. The right-wing FPÖ scheduled the project for debate in the Austrian Parliament, while several politicians denounced it in Slovenia.

45. See, for example, Miwon Kwon, *One Place After Another: Site-Specific Art and Locational Identity* (Cambridge, MA: MIT Press, 2002), pp. 28–9, 101–37; Claire Bishop, *Artificial Hells* (London: Verso, 2012), pp. 19ff.

(Fig. 13). The ensuing news coverage predictably focused on the scandalous aspects of each work. The controversy surrounding Stelarc's work included the suggestion the artist was mocking patients with actual ear deformities, since a part of the standard medical correction involves first grafting an artificial ear onto the arm.⁴³ The reception of Smrekar's work – especially in the German-speaking world and her native Slovenia – was based on the fanciful suggestion that she was creating and breastfeeding human-dog hybrids;⁴⁴ in fact, both tender and monstrous forms of cross-species co-existence were thematically gestured at in the performances. The availability of these iconic images to be featured alongside such stories undoubtedly fuelled such scandalised reception and the rippling, outraged affect they sent through cyberspace.

My aim here is not to adjudicate on the success or failure of these works; further, it is questionable as to what extent artists like Stelarc and Smrekar can be said to have control over the reception of their work once circulated in the mass media. However, I want to underline the fact that artistic inquiries into biotechnology must be understood within the broader context of the image economy of advanced capitalism. Here, any life can be flattened into a set of viral images. The critical task for bio-art therefore cannot be only to create new and unusual life-forms; it must rather also operate in a way that resists flattening life into a viral image, that encourages, perhaps, a more difficult mode of looking at life.

The Living Image and the Difficulty of Reality

While bio-artists and commentators on bio-art alike suggest that bio-art offers critical insight into biotechnological change, such assessments are rarely made by comparison with non-artistic methods of scrutiny. The situation is to an extent paradigmatic of a broader theoretical intersection with project-based, post-conceptual art in general: environmental art, socially engaged participatory art, artists' work in archives, artistic research, and so forth. To the extent that such work borrows liberally from the methodologies of other disciplines, it seems we can only ascertain its value when we consider it within the broader context of discursive and political culture, a context that includes more than just other artworks.⁴⁵ Bio-art likewise does not exist in a discursive vacuum, and to establish its critical potential – to establish what insight bio-art can offer into its subject matter – we ought to likewise compare bio-art to other forms of discourse available to us. Therefore, in the second part of this investigation I return to the tension between art and philosophy as contesting yet intertwined disciplines.

There is, however, a genuine methodological awkwardness to such a comparison. To start with, the very question of *which* works of bio-art and *which* works of philosophy to focus on opens up a vast terrain of options. Philosophy of science within the critical theory and feminist traditions, for example, has come to interweave with bio-art in interesting ways. For instance, Maja Smrekar explicitly cites the work of Donna Haraway and Rosi Braidotti in relation to Smrekar's series of performances *K-9_topology* (2014–17). For the project *ARTE_mis* (2017), during which Smrekar fused one of her own cells with that of her dog, the artist wrote in the gallery text: 'Even though the hybrid cell exists frozen in liquid nitrogen, it evokes public discourse and serves as a reference to the theory of Rosi Braidotti, who requires us to think beyond humanist limitations, in order to embrace the risks that becoming other-than-human will bring in the future.'⁴⁶ Donna Haraway's recent book, *Staying with the Trouble: Making Kin in the Chthulucene* (2016), which includes a memorable if potentially unsettling phrase, 'make kin, not babies!', has parallels to Smrekar's



Fig. 10. Stelarc, *Ear on Arm Performance* at the Lorne Sculpture Biennale (2011). (Photo: Nina Sellars)



Fig. 11. Maja Smrekar, *K-9_topology: I Hunt Nature and Culture Hunts Me* (2014), performance with two wolf-dogs and a wolf. Le Nadir, Bourges, France. Produced by: Bandits-Mages Rencontres (Bourges, France); co-produced by Kapelica Gallery/Kersnikova Institute (Ljubljana, Slovenia). (Photo: Amar Belmabrouk)

performance *Hybrid Family* (2016), for which Smrekar cohabited with two dogs for three months, underwent physiological training to stimulate milk production in her breasts, and finally allowed a puppy to lick a drop of milk from her breast in a public performance.⁴⁷

Precisely because of these cross-pollinations between bio-art and critical theory, I will compare bio-art with a tradition that is more obviously distinct from it, namely, with philosophical, analytic bioethics. Bioethics is modelled on what it perceives as the patient, rigorous, and common-sensical analysis, inherited in an uninterrupted line from the (mostly utilitarian) theories of the European

46. ARTE_mis exhibition text, Kapelica Gallery, Ljubljana, Slovenia, 16 March – 7 April 2017.

47. Donna J. Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Durham, NC: Duke University Press, 2016). The work is cited at Smrekar's Ars Electronica page: Maja Smrekar, 'K-9_topology', *Prix Ars Electronica 2017*, <http://prix2017.aec.at/prixwinner/25890/> (accessed 28 April 2019).

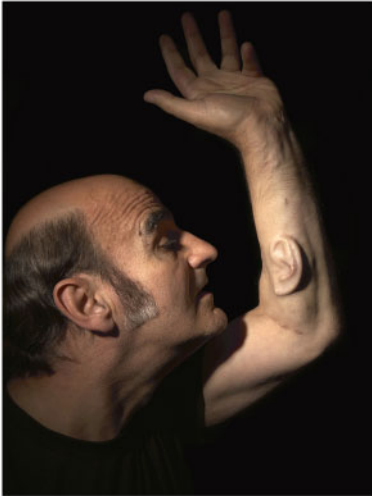


Fig. 12. Stelarc, *Ear on Arm* (2006), body modification. Performed in London, Los Angeles, Melbourne. (Photo: Nina Sellars)

48. For example, British philosophers Mary Warnock and Bernard Williams chaired several government ethics committees; notably, the Warnock Report of 1984 became the basis for the Human Fertilisation and Embryology Act of 1990. For an overview of bioethics, see Helga Kuhse and Peter Singer, 'What Is Bioethics? A Historical Introduction', in Helga Kuhse and Peter Singer (eds), *A Companion to Bioethics* (Malden, MA: Blackwell, 2009, 2nd edn), pp. 3–12.

49. Van Eck, *Art, Agency and Living Presence*, p. 52.

50. Van Eck, *Art, Agency and Living Presence*, pp. 52–5, 107–209.

Enlightenment. Unlike critical theory, or post-structuralist approaches, bioethics is largely not interested in the institutional context of bioengineering, focusing instead on the permissibility of individual biotechnological interventions (this lack of a *prima facie* suspicion of the capitalist state might also be the reason why analytic philosophers are more likely to serve on governmental ethics committees⁴⁸). While perhaps less obvious than a comparison with an author like Donna Haraway, the comparison between bio-art and bioethics then affords a clearer contrast, one that is perhaps representative of broader divisions within our discursive culture.

I begin, however, with an artwork. *Natural History of the Enigma* consists of a series of objects and texts arranged around a central biotechnological piece: as well as the petunia, Kac has produced texts explaining the work, collectible seed-packs, photographs and watercolours that can be exhibited alongside the flower, and a large abstract outdoor sculpture (Fig. 14). Though these are thematically connected to the 'Edunia' plant, it is the plant that is the focus of the viewer's experience of the work (Fig. 1). This experience is one of a perceptual encounter with the flower, growing in a garden or in a gallery setting, but, as with other pieces of conceptual art, it is also informed by the viewer's prior knowledge of the work; in this case, we look at the flower while being asked to contemplate its genetic origin. The transgenic plant was produced, as mentioned, by introducing a human gene, extracted from Kac's blood sample, into the plant's DNA. In humans, this particular gene is normally responsible for a protein, IgG, which plays a role in the human immune system. There is an irony, then, in using a gene usually charged with repulsing alien life-forms to be here 'uniting' human and plant into a single organism. Before being inserted into the flower, however, the human gene was further modified in two ways. First, the gene was altered so that its expression was linked with the production of a blood-red colour. Such colour-marking is a usual procedure in biotechnology, known as 'flagging': by linking a gene sequence with another gene that codes for a colour, scientists can visually test where the gene is being expressed. Secondly, the gene was modified so that it would *only* express itself in the veins on the petals of the flower: thereby, only the veins are blood-red, not the flower as a whole.

What kind of looking does this knowledge suggest? The entire procedure has resulted in no functional change to the flower: the protein that the flower produces as a result of the genetic modification remains inert, and the flower has no 'use' for it. For the viewer, however, the knowledge of the genetic origin of the image may give rise to that disconcerting feeling of 'living presence', of attributing life to art, which I have mentioned in relation to art-historical discourses at the outset of this inquiry. Caroline van Eck, in the study of living presence I cited, suggests that an underlying feature of attributing animation to paintings or sculptures across historical periods is precisely this experiential, potentially unsettling character: 'the creeping awareness or sudden appearance of the inanimate as an animated'.⁴⁹ The sense of a living presence is typically *not* a case of *confusing* an object for a living being, but a more ambiguous state of seeing the object as animated, while we retain some cognitive distance from that supposition.⁵⁰ Similarly, with Kac's flower we know there is no real human blood present before us, yet, both the flower's appearance and the story of its creation may give rise to that palpable sense of it being there.

What is additionally intriguing about Kac's flower, however, is that there of course actually *is* life present: the life of the flower itself, if not the 'human' life we see. Here, Kac's work can be viewed as a continuation of another art-



Fig. 13. Maja Smrekar, *K-9_Topology: Ecce Canis* (2014), press image for the performance piece. Produced by Kapelica Gallery/Kersnikova Institute (Ljubljana, Slovenia). (Photo: Borut Peterlin)



Fig. 14. Eduardo Kac, *Natural History of the Enigma* (2008), painted fiberglass, 8.5 × 4.2 × 3m. Collection of the Weisman Art Museum, Minneapolis, MN, University of Minnesota Percent for Art in Public Places Commission, 2010.32. (Photo: Weisman Art Museum)

historical lineage that explores the tension between mimetic representation and its physical support. To draw out this idea, we may consider another artistic treatment of a flower, an eighteenth-century flower still life by Jan van Huysum (Figs 15 and 16). Van Huysum's are stunning illusionistic still life designs, containing numerous virtuoso passages, such as transparent drops of water and

51. Hanneke Grootenboer, 'The Pensive Image: On Thought in Jan Van Huysum's Still Life Paintings', *Oxford Art Journal*, 34/1 (2011), pp. 13–30 at 26.

52. Grootenboer draws on the ideas of Hubert Damisch, Roland Barthes, and Gilles Deleuze Felix Guattari to formulate this notion (Grootenboer, 'The Pensive Image', pp. 27–8.) See also Hanneke Grootenboer, *The Rhetoric of Perspective: Realism and Illusionism in Seventeenth-Century Dutch Still-Life Painting* (Chicago: University of Chicago Press, 2006).



Fig. 15. Jan van Huysum, *Bouquet of Flowers in an Urn* (1724), oil on wood, 80 × 59 cm. Los Angeles County Museum of Art. (Photo: Los Angeles County Museum of Art)

trompe l'oeil insects. However, as Hanneke Grootenboer has pointed out, the paintings are also full of instants where the opacity of paint is announced in opposition to such illusionistic effects. For example, when the white paint, used to indicate the reflection of light, is piled up by Huysum, it casts an actual shadow, one that makes the painted shadow redundant.⁵¹ As still lifes, these paintings are cognitively charged artworks – the symbolism of mortality is suggested in the wilting flowers and the proliferation of insects – however, as Grootenboer has argued, it is also in such instances of painterly opacity that the Netherlandish still life tradition created cognitive suspense for the viewer. These are the images that Grootenboer invites us to think of as *pensive*, moments of thought *in painting*.⁵² An analogous mimetic suspense, it seems, is achieved by the flowers of Kac's plant. Our attention can constantly oscillate between the illusion of human–plant kinship (the image of blood) and the

biological basis of that kinship (the red-expression of the human gene in vegetal matter), or, to use the terms usually applied to painting, between the ‘pictorial content’ and its ‘material support’. With these art-historical parallels to hand, we may already note a distinction, then, between a pensive image and the viral images discussed earlier. Whereas the green bunny announces its meaning brashly – its uniform green glow immediately calls to mind connotations of genetic engineering, mutants, aliens, spectres, and so forth – the image of the blood on the flower is rather unassuming by comparison. What is interesting about the blood image is not its immediate impact, but the reflective pause it generates and the *aporia* derived from its ambiguous presence.

Turning to another kind of thoughtfulness and reflection, what manner of attention is invited by the philosophical image of the human-chimp chimera in Julian Savulescu’s paper mentioned in the beginning of this study? Some context will be helpful here. Savulescu, who heads the Uehiro Centre for Practical Ethics at Oxford University, is on the permissive side of the bioethics spectrum, defending, for example, fitness-based selection of embryos,⁵³ and the transhumanist idea that we should engineer ourselves into a morally superior species.⁵⁴ The paper in which the example appears, ‘Genetically Modified Animals: Should There Be Limits to Engineering the Animal Kingdom?’, makes for an interesting comparison with Kac’s work because of its approximate contemporaneity and because, like *Natural History of the Enigma*, the paper is concerned with the possibilities of augmenting non-human species with human-derived biological material. Savulescu argues that there are no general, overriding reasons – such as ‘threat to humanity’ or ‘we should not play God’ – against the creation of genetically modified animals containing human material.⁵⁵ Savulescu attempts to set up a general framework for weighing the utility of each biotechnological intervention, and his solution is again highly permissive, allowing for the creation of beings currently disallowed in all jurisdictions, such as the gestation of fully grown human-chimp chimeras (individuals containing an artificial fusion of human and chimp tissues).

It is not the soundness of Savulescu’s argument that concerns us here, however, but the place of the thought experiment within it. The passage in which the imagined creature receives the most attention is the one I cited in the introduction (‘Imagine we were to create a human-chimp chimera by fusing human embryonic cells with chimp embryonic cells. . .’). The passage concerns an interesting puzzle of identity-determining conditions in bioengineering. As Savulescu notes, creating a human-chimp chimera, whose life would be one of utter misery, would be clearly unethical. However, what about creating chimeras whose lives are only somewhat bad?

Suppose, for example, the animal suffers mild persistent depression. Here we encounter the non-identity problem. If the life is worth living because it has good food and social companions, and the intervention that causes the negative welfare property is a part of the identity determining intervention, the intervention is not so bad from that [genetically modified animal]’s perspective. The depressed human-chimp chimera can have no complaint, even if mildly depressed, regarding the act of creating it, because without the act of fusing human and chimp embryonic cells, it would not have existed and its life is not all bad.⁵⁶

The point here is that some features are identity determining: they make the individual what they are. Take those features away, and the individual ceases to exist. As for each individual, *their* existence is vastly preferable to non-existence, Savulescu claims, even a creature that suffers ‘mildly’ can have ‘no complaint’ about having been created. Savulescu’s clever argument thereby



Fig. 16. Jan van Huysum, *Bouquet of Flowers in an Urn* (detail).

53. Guy Kahane and Julian Savulescu, ‘The Moral Obligation to Create Children with the Best Chance of the Best Life’, *Bioethics*, 23/5 (2009), pp. 274–90.

54. Ingmar Persson and Julian Savulescu, ‘Moral Transhumanism’, *Journal of Medicine and Philosophy*, 35/6 (2010), pp. 656–69.

55. Savulescu, ‘Genetically Modified Animals’, pp. 661–5.

56. Savulescu, ‘Genetically Modified Animals’, p. 657.

57. Van Eck, *Art, Agency and Living Presence*, pp. 33–6.

58. Cora Diamond, 'The Difficulty of Reality and the Difficulty of Philosophy', in Stanley Cavell *et al.*, *Philosophy and Animal Life* (New York: Columbia University Press, 2008), pp. 43–90. Coetzee's lectures and responses are gathered in J.M. Coetzee and Amy Gutmann, *The Lives of Animals* (Princeton: Princeton University Press, 1999). Singer's later reflections can be found in Peter Singer and Karen Dawn, 'Converging Convictions: Coetzee and His Characters on Animals', in Peter Singer and Anton Leist (eds), *J.M. Coetzee and Ethics: Philosophical Perspectives* (New York: Columbia University Press, 2010).

opens the door for the biotechnological creation of creatures whose welfare is suboptimal, provided they would be useful for experimentation.

This is merely one of the many points that Savulescu makes in that paper, and the human-chimp chimera is just one of the many creatures he asks us to imagine – including a mouse with a small human brain, and a pig with a human uterus. Such examples serve various points in the argumentative structure. I wish, however, to note here the alacrity, and perhaps even levity, with which a philosophical text can supply us with such imaginings. Philosophy can instantaneously dream up moderately-but-not-overly-depressed chimp-humans; happy or unhappy human-bearing pigs; mice with somewhat human brains, or mice with fully human cognitive capacities – all with a mere invitation to 'suppose that. . .'. These apparitions – *phantasiai* as classical rhetoricians referred to the mental images conjured by a speaker⁵⁷ – are, however, not dwelt on; they are sketched out with only as much detail as is necessary to make a given point. Importantly, each of their properties is epistemically transparent: *ex hypothesi* the chimera is only somewhat depressed. In the thought experiment, we are rendered completely certain as to how the chimera is and how it feels ('Suppose, for example, the animal suffers mild persistent depression'). This imagined certainty belies anything we would likely feel should we actually behold a saddened half-monkey, sitting forlornly in a laboratory setting.

The state of certainty invited by the philosophical mental apparition contrasts starkly with the state of uncertainty and ambiguity called forth by the complex image of human blood in the *Natural History of the Enigma*. As a living and pensive image, that work locks us in a meditative stasis: is there life here or not; do we see an instance of cross-species kinship or a mere pictorial representation? The artwork testifies not to the ease but to the difficulty of seeing biotechnological life; the ontological status of the flower as kin or not-kin is made to slip constantly in and out of view. In the philosophical paper, the images of biotechnological creatures are by contrast determinate and transparent, subordinate as they are to the goal of driving home a philosophical conclusion. In the bio-artwork, there are, by contrast, no clear conclusions as to the rightness or wrongness of what we see; instead, there is but the interpretative and ethical difficulty of what we are beholding.

We have here two utterly dissimilar rhetorical modes of engaging the ethics of bioengineering, and so we might wonder about the potential of thought that each involves. Could art here be understood *cognitively*, that is, as another form of philosophy? Van Eck's analysis of the living presence response, as well as Grootenboer's account of the pensive image, both emphasise the experienced difficulty of beholding something. However, does such a *difficulty* present in the living and pensive images yield intellectual understanding, or does it merely obstruct our thinking with unnecessary befuddlement? To offer one possible response to this question, we might make use of the philosopher Cora Diamond's idea of the 'difficulty of reality'. This is a notion that, suitably enough, Diamond develops during her reflections on another dispute between art and philosophy: one occasioned by the novelist J.M. Coetzee's treatment of the lives of animals in his novel *Elizabeth Costello*, and the analytic ethicist Peter Singer's disparaging response.⁵⁸

Diamond's term 'difficulty of reality' is meant to emphasise a kind of lived aporia, a moment when we find something disturbing because it seems to resist our attempts at grasping it rationally:

The difficulty lies in the apparent resistance by reality to one's ordinary mode of life, including one's ordinary modes of thinking: to appreciate the difficulty is to feel oneself

being shouldered out of how one thinks, how one is apparently supposed to think, or to have a sense of the inability of thought to encompass what it is attempting to reach.⁵⁹

The examples of the difficulty of reality that Diamond discusses are diverse. They include sudden realisations of mortality, beauty, kindness, and social indifference to destruction: indeed, it seems this notion of a difficult reality can be produced by anything that suggests the world is no longer captured by the conceptual categories we have employed so far. Faced with a difficulty of reality, according to Diamond, one has two options. One might either ‘deflect’ the difficulty into a mere philosophical puzzle, something to be solved by applying our cognitive powers. Here Diamond builds on Stanley Cavell’s notion of ‘deflection’, whereby our ‘powerlessness presents itself as ignorance – a metaphysical finitude as an intellectual lack’.⁶⁰ Moments of such deep discomfiture – for example, at the way in which our mortality jars with our life projects, or at the way in which a beloved person might betray us – all get deflected into for-or-against philosophical puzzles, such as ‘is death a bad thing?’ or ‘do other people have minds?’ Diamond’s suggestion is that a work of art might, instead, hold the difficulty in view.⁶¹ Indeed, the most unoriginal or clichéd thing that one can do cognitively is to subsume a difficult experience under a set of well-honed philosophical concepts; conversely, sometimes the more ‘thoughtful’ thing to do would be to show that reality resists those familiar concepts. Staying with the difficulty, rather than articulating it as a puzzle in familiar philosophical terms, then, can itself be an *achievement*, and the only way to do justice to the ethical and existential complexity of our experience.

Arguably, images too are a field in which the tension between deflection and difficulty takes place. The biotechnological change of recent decades is one of the difficult realities of our time, one that has inflated our sense of mastery of the biological world, and yet complicated our sense of kinship with it. One way of deflecting the difficulty may be through the viral images, which I analysed in the previous section. The image of the glowing rabbit departs from the original, complex context of its creation and instead becomes just another half-comprehended controversy to be consumed within mass media discourse. Following Diamond, however, we may find another manner of deflecting the difficulty in how bioethical discourse dreams up potential futures, and weighs up their merits. The image of the depressed human-chimp does not refer to any particular chimp; the role it plays is merely that of a clear-cut example. Such examples have a role to play: the abstract, philosophical method, which employs such thought experiments, can of course be a serious, rigorous, and indeed vital intellectual enterprise. Yet, it is possible to be appreciative of philosophy and register limits to its rhetoric: the rhetoric of imagining possible future creatures, cross-calculating the ethical costs and benefits inherent in each, and then – one supposes – blithely creating those that our thought experiments designate as permissible. What this leaves out is the sense of difficulty, the sense that we sometimes do *not* know what to do, that a course of stupefied inaction might be more appropriate than that of resolute action. Sustaining the difficulty of reality might be the intellectual achievement beyond the grasp of philosophical *phantasiai*, and one that the pensive images of art, such as that in the *Natural History of the Enigma*, are better suited to provide.

I began my investigation with the suggestion that art and philosophy alike have long attempted to conjure a sense of living presence in their rhetorical endeavours. At the turn of the millennium, the relationship between life and images has been undoubtedly complicated through biotechnical advancement, through the digital circulation of images, and through artistic and philosophical

59. Diamond, ‘Difficulty of Reality’, p. 58.

60. Stanley Cavell, ‘Knowing and Acknowledging’, in *Must We Mean What We Say?* (Cambridge: Cambridge University Press, 1969). Cavell’s remarks are made in relation to Cartesian scepticism about the knowledge of other minds.

61. Diamond, ‘Difficulty of Reality’, p. 59.

departures. In this article, I have offered some distinctions that may help work our way through this terrain. The first sense of life in images can be seen in what I called viral images, a concept that bears some resemblance to W.J.T. Mitchell's notion of a 'biopicture'. The viral image strips a given life of its particularity, and flattens it into an iconic representation with a viral 'life' of its own. These are potent pieces of visual information; they are replicated rapidly and with a sense of urgency, but can lend themselves to antithetical meanings and may serve any number of political agendas. Secondly, the 'mental image' (*phantasia*) of the philosophical thought experiment evokes a living thing to aid ethical deliberation. Here, life is determined in every detail by the philosopher: its purpose is not to be contemplated in its complexity, but to support a definitive argumentative conclusion. Finally, adapting the term from Grootenboer, we have what we might call the *pensive* images. These images resist conclusions and instead suspend us in a thoughtful stasis; they emphasise the difficulty of a situation rather than immediate ways out of it (in the case of bio-art, evocations of living presence may be crucial to achieving that stasis, but other kinds of art may well use other means to that end). Sustaining such a state of pensiveness, such uncertainty in the face of an ethical decision, should itself be thought of as a cognitive achievement. Though I have highlighted the difficulties inherent in each of these competing rhetorical modes, my aim here has not been to adjudicate between them (in life, we surely participate in many rhetorical modes). The productive suggestion, I hope, is that between the viral image of the media spectacle and the *phantasiai* of philosophy, there is another, pensive image, which (bio-)art may make its own.