THE SOCIALITY OF INFECTIOUS DISEASES

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In his preface to Jorge Luis Borges’ *Labyrinths*, André Maurois brings the reader’s attention to the significance of problem-making. We are offered a glimpse of what we might expect from Borges’ text through reference to the idea for a ‘frightening story’ by the renowned writer and poet Paul Valéry: ‘it is discovered that the only remedy for cancer is living human flesh. Consequences’ (Maurois 2000:11). This eerie and, as I read it, paradoxical remedy that requires what it also aims to succour, serves as a provocation to reflect on the manner by which a problem is posed (Fraser 2010; Michael and Rosengarten 2013; Savransky, this volume). I offer it here as a foretaste of a problem-making arguably no less labyrinth-like than Borges’ tales. In what follows I ask in what manner might it be said that the biomedical endeavor of dealing with infectious disease conceives the social as a resource? But, also, what might infection suggest otherwise?

Throughout the chapter, my primary focus will be HIV, with mention also of the newly emergent Zika virus as well as Ebola and Tuberculosis (TB). Of these latter three, TB will be discussed in more detail as a co-infective agent with HIV in the concluding sections. As I hope will become evident, the biomedical notion of the social, as it is posed in response to each of these life-threatening events, is not simply for sustaining. Indeed, by way of a small number of textual examples, I want to expose the manner by which the biomedical depends on
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constituting the social as its purpose but, in doing so, treats it as little more than a passive or disruptive obstacle to the challenge of dealing with such infections. I argue that this bears conceptual but, more crucially, questionable cost to human life, despite science’s not infrequent achievements.

CONSEQUENCES

When I first began working as a social scientist in the HIV field my late friend Alan Brotherton, connoisseur of many things that no doubt contributed to the brilliance of his activism and policy making, said to me ‘we got antiretroviral drugs which are by no means ideal but their presence has interceded in the possibility of something better’. I’ve often contemplated this statement, or a version of it, in relation to the manner in which pharmaceuticals have acquired a claim on approaches to the epidemic with the consequence that other dimensions of HIV, commonly perceived as the social dimensions of the epidemic, have become marginal for inquiry. Arguably, one of the most notable of these has been the inventive engagement of those now targeted and, without argument, aided by pharmaceutical interventions. Long before HIV antiretroviral drugs showed efficacy in suppressing the virus, safe sexual practices were enabled by gay sexual communities instituting condom use. Yet despite this potentially telling feature of what has contributed to preventing transmission, alongside medical advancement, other novel and inventive modes of risk negotiation that have emerged with the drugs are often reduced within biomedical narratives to simply risky or not (Kippax and Race 2003; Rosengarten 2009; Stengers 1997). Brotherton’s observation was made at a time when the drugs were considerably less sophisticated, not only reducing viral presence but also, for many, inducing damaging life disruptive drug effects (Rosengarten, 2009). Although it was these drugs’ unanticipated unwanted effects — the iatrogenics of HIV biomedicine — that initially provoked me to contemplate the work of biomedical intervention, here I wonder how this connects with a conception of the social in the continuing problem-making of HIV as well as other infectious diseases such as Zika, Ebola and TB.
During the 2014–2015 Ebola epidemic in Guinea, Liberia and Sierra Leone, biomedical approaches involved drastic measures such as placing those infected (or thought to be infected) in isolation wards, without their families or others close to them knowing whether they were still alive, and unable to provide them with any form of care. Another drastic intervention was to isolate villages suspected of harbouring the infection, leaving entire communities without access to vital necessities. A third intervention involved heavy-handed security threats of jail terms for those caught hiding someone with the virus (Mullen 2014:e550 Mari Sáez, Kelly and Brown 2014). Because underdosing with antibiotic TB drugs can result in drug resistance (CDC 2016), TB treatment is prescribed through directly observed therapy (DOT) in countries with high prevalence and poor infrastructure. The treatment involves an onerous daily dosing regimen (usually for six months) that may incur feeling dizzy, sick, flu-like symptoms and jaundice, while the strategy of DOT demands repeated, often lengthy and costly travel to a clinic (Harper 2010; Noyes and Popay 2006).

When I was preparing to write this chapter, the Zika virus dominated the headlines of major news outlets because of its capacity to be transmitted by a strain of mosquito bite, with life-damaging consequences to the foetus carried by a pregnant woman (Baud et al. 2017). One of the most prominent newspapers in the United Kingdom, the *Guardian*, reported on 3 February 2016 that a race was on to produce a vaccine to protect ‘the unborn’ (Milman 2016). Noting that this aim was made difficult by the need to test drugs on pregnant women, a group ‘normally shielded from experimental trials,’ Mike Turner, head of immuno-biology at the Wellcome Trust, was quoted as stating, ‘[t]esting a vaccine on pregnant women is a “practical and ethical nightmare”’. Nonetheless, amidst acknowledgement that it would be difficult to produce a vaccine for the current epidemic, Anthony Fauci, Director of the US National Institute of Allergy and Infectious Diseases, was reported to state that a vaccine to prevent future infections might be available by 2017. Leaving aside the complexities of vaccine development, a year later, the means for preventing the damage of Zika infection to a foetus continues to reside with vulnerable women. The website of the US Centre for Communicable Diseases (CDCa no date) includes the following advice to women of child-bearing age: ‘If you live in or must travel
to one of these areas, talk to your doctor or other healthcare provider first and strictly follow steps to prevent mosquito bites and practice safe sex. Needless to say, it is not always possible for women to control safe sex, as is well-known from the experience of HIV prevention. Compounding what is constituted as a highly gendered biomedical problematic of Zika prevention, termination of a pregnancy is illegal in many of the affected countries (Aiken et al. 2016).

My hunch is that the above style of media reporting does well to highlight the crucial need for intervention and then, with the suggestion of a biomedical solution, provides reassurance to those of us at some distance from the identified site and source of infection that its problem will, eventually, be solved. But as the risk of Zika infection for pregnant women and the foetus shows, the promise of a biomedical solution is able to take centre stage while glossing the demands on those affected by the agent of infection. Although a medically inscribed public health approach to Zika, Ebola and TB may be thought a necessary protective measure for the greater good of more lives saved, others argue, with differing modes of emphasis, for a more patient or community oriented approach (Hanson, Zembe and Ekstro 2015; Harper 2010; UNICEF 2016).

In HIV, the challenges of preventing transmission continue despite the advent of treatments and, although as I have noted above, drugs have radically improved there is no cure in sight (Sankoh et al. 2015).

However, it is the different but not unconnected effects arising from the biomedical response to HIV, Zika, Ebola and TB that lead me to propose a related, yet somewhat differently oriented focus to that addressed to individual and community needs. Leaving aside the no doubt important focus on health economics and poor infrastructure raised by others and predominantly in the field of anthropology (Harper 2010; Farrar & Piot 2014; Ghazanfar et al. 2015), I would like to bring into question the logics and indifferences that, as Isabelle Stengers (1997; 2011) has shown, succeed in constituting a situation of concrete difficulties. But because in this chapter I am unable to do justice to Stengers’ complex undertaking for a different science, I shall attempt the beginning of a response to a more modest set of questions: How does biomedicine remain cocooned from accountability, despite evidence of a vastly complex array of dynamic relations that cut across a conventional science/social divide to effect
what becomes biomedical intervention? What labyrinth-like process are we – scientists, social scientists, policy makers and those directly affected, including health professionals – caught within? And, not least, by what mode of attention might this process be opened to the possibility of consequences different to those analogous, in some manner, to feeding human flesh to attenuate cancer?

**Navigating the Labyrinth**

For the reader who may be thinking that I have ventured too far into the phantasmagorical by drawing an analogy between Valéry’s tale and that of modern medical science, I want to say that, in truth, I have my own reservations. I am most certainly hesitant about my decision to pursue the analogy if it should be mistaken as a damning of medical science. I am taken with the analogy precisely because it enables me to dramatise the boundary that constitutes the social as external to biomedical science and, arguably, as it does so, forecloses the possibilities for a more responsive or, as Maria Puig de la Bellacasa (2017) proposes, ‘caring’ science. That is, a science attentive to its own selective, yet highly infective modes of knowing, and the consequences that may follow in the endeavour of bringing about a finite solution (Rosengarten 2009; Race 2012; Edelstein, Angelides and Heymann 2015).

Of the three infections discussed in this chapter, HIV has acquired considerably more resources and its networks are vast, involving specific public and philanthropic funding, multiple disciplines, numerous national and global civil society organisations, and ring-fenced social research in contrast to what may be observed in response to the much longer event of TB and, perhaps less surprising, to the more recent events of Zika and Ebola. Indeed, the field of HIV can be viewed as exemplary for the labyrinth-like manner that those of us working across the field of infectious diseases – if not health and medicine more broadly – may be caught within. While on the one hand, it is evident that health resources but also continued debate and reflection are crucial for responding to the dynamics of health and disease, it can also be said that what attracts resources is the field’s legitimation by science as an object worthy of inquiry. In short, and based on
my direct involvement in the HIV field, I am inclined to deduce that resources come hand-in-hand with entrenched logics and modes of practice and that, as I show below, once such logics are established, they serve to inoculate against other modes of engagement.

The first international conference on HIV took place in 1985. Since its fledgling beginnings, it has now grown under the auspices of the International AIDS Society to attract delegates in the thousands (the Washington DC 2012 conference had close to 20,000 delegates), including scientists of multiple persuasions as well as members of numerous activist civil society organisations, national public health authorities from all over the globe plus major public, philanthropic and commercial research funders. Not surprisingly, conference proceedings are watched over by invited local and international media outlets and, since the introduction of antiretroviral drugs in 1996, there is invariably much ado about what suffices as the latest scientific findings. Shoring up the reputation of such conference events as worthy of national and global media attention, high-ranking politicians such as Bill Clinton and the late Nelson Mandela are now an expected feature of the opening and closing addresses, along with prominent biomedical scientists and activists.

To be sure, such forums with their public advocacy for HIV has import for maintaining funding support for research and intervention. Nonetheless, it is important to bear in mind that what is active in their possibility of public advocacy is an assemblage inclusive of a veracious virus and the paraphernalia that has come with this, for example: diagnostics, drugs, prevention education, social marketing, chairmanships, grant applications, changes in sexual practice and the more nuanced work of a diverse array of civil society organisations. And, as is acknowledged amidst such forums, also included are the millions who have died and those who are now infected or at risk of infection. As this collective and highly complex dynamic is presided over, and massively overshadowed, by the weighty orchestration of a biomedical conference agenda, an attentiveness to what has come to matter and the complex manner in which it bears on the costs of this to life, is peculiarly subsumed within the thinking constraints of modern science and the world it expresses. Within such forums, presentations – whether scientific, social scientific, policy or activist – are required to
comply with one of two formats for first stage abstract review: option 1 must contain a background and hypothesis tested, methods, results and conclusions with future implications; option 2 must contain a background and objectives of a programme, project or policy, a description of the project, lessons learned, conclusions/next steps. In short, there is no place for exploratory conceptual work that attempts to experiment with different modes of engagement, modes that might, for example, pursue an appreciation of the designated ‘social’ as more than composed of distinct agentive human actors warranting aid and/or correction.

This blatant exclusion of what else might come to matter beyond or contrary to a modern scientific schema came home to me during the opening speeches of the 2012 IAS Conference in Washington DC when Fauci, cited above in reference to Zika, and whose research and advocacy have no doubt contributed to gains in the HIV epidemic, took the stage to announce ‘the end of AIDS’ was now on the horizon, thanks entirely to the singular achievements of biomedical antiretroviral drugs and other biomedical developments. If the consequences of Fauci’s seeming indifference to the deemed ‘non-scientific’ for what will change the epidemic were not so apparent in his claim, the statement might have been laughable – suggesting that the rest of us ‘non-biomedical scientists’ could go home to wait for the cure. Fauci’s statement was mediated just a little in its backing by Hillary Clinton, at the time Secretary of State for the United States of America. As a major American international political figure, Clinton’s opening speech underscored the acclaimed role of biomedicine, but did so with a somewhat different claim of the coming of an ‘AIDS Free Generation’. Perhaps her speech writers had the foresight to recognise that none of the biomedical interventions currently available offer the likelihood that existing HIV infection is soon to be cured, and the experience of HIV ended. That said, Clinton’s promise ventured no further than Fauci’s in its premise that a generation free of HIV infection would be achieved through the prioritising of a finite biomedical solution.

Leaving aside the conflation of HIV and AIDS in both Fauci and Clinton’s pronouncements — with AIDS no longer a near inevitable consequence of HIV due to antiretroviral drugs to prevent HIV infectivity, their having already
been established as preventative of AIDS — the world audience might have been tempted to believe we are on the cusp of an extraordinary biomedical achievement, an achievement premised on an inert social in wait or, at best, as we see below, to be held against its deficit tendencies that might prevent the singularity of biomedicine.

Since the Washington (2012) and also Melbourne IAS (2014) conferences – the latter turning on the announcement that consistent dosing with antiretroviral drugs can function as a form of pre-exposure prophylaxis (PrEP) for HIV negative people, a claim that informed Clinton’s speech – Kane Race (2015: 7) has challenged the HIV field to attend to what he terms its compartmentalised/ non-relational thinking and, specifically, a ‘presumptive negativity of sex’ in dealing with the virus. By paraphrasing the research questions cited in biomedical presentations at the IAS and other international HIV conferences, namely: ‘Had trial participants adhered to the dosing requirements? How do we know? Are they telling the truth? How should we measure this?’ Race (2015: 9) underscores how medical science logics are fixed to their own project as if above and beyond what has called for intervention. By illuminating how the demand for dosing not only excludes what makes for its happening, but succeeds in doing so by reducing the social that we might otherwise expect to be paramount for its complex possibilities, Race proposes a different perspective. Acutely attuned to the worlds of gay cultures and their togetherness with other entities in the event of HIV prevention and pleasure, his challenge to the field goes to the heart of what might be more responsibly considered at stake:

[C]omparatively little thought or attention has been given to the processes through which HIV-negative and untested individuals might (or might not) become subjects of HIV prevention. […] How might we think about and begin to exercise responsibility at a scene whose appeal consists, to some extent, for its participants, in the way it promises to suspend or momentarily interrupt any grip on the sovereign or rational subject that is taken to be the foundation of responsibility in modern culture? Or, put differently, how might we attend responsibly and effectively to pleasure, where this pleasure
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consists in some form of ecstasy or de-subjectification? I’m talking about sex and drugs (Race 2013).

By pointing to the coming together of sex and non-medical drugs in the pursuit of sexual pleasure – precisely where, as he sees it, a mode of ‘de-subjectification’ or ‘de-rationalising’ may be the experienced effect – Race not only contests the exclusionary and somewhat contradictory assumptions by the HIV biomedical field that come with the causal framing of the problem of dosing adherence. Going beyond this, he highlights the situated process by which HIV transmission may or may not take place. This is a process that well exceeds simple presuppositions that the social is merely the doing of human actors, thus extending the research terrain and resisting the foreclosure of biomedicine on what could be claimed as its concern for a sustained achievement of HIV prevention.

DEEP WITHIN THE LABYRINTH

Race’s pithy account of the social for biomedicine and the import of the notion of ‘togetherness’ in his proposal raises, in turn, the question of what drives the knowledge-making that mobilises his concern. Exemplary, I suggest, in exposing Stengers’ (2011) claims of the indifference of modern science to what it regards as the ‘non-scientific’, is the RCT. Without detailing the method and the many critical accounts that it has elicited (see for example, Michael and Rosengarten 2013; Timmermans and Berg 2003; Will and Moreira 2010), I cite one particular article that suggests the method has come to matter more than those whose health it claims to act for. Lead authored by Nancy Padian with a long list of prominent co-author HIV trialists, the article, entitled ‘Weighing the Gold in the Gold Standard: Challenges in HIV Prevention Research’, was published in the esteemed journal, AIDS (Padian et al. 2010), thus not only earning endorsement, but also, arguably, assisting in the cultivation of what has become of decided importance to clinical research and, hence, evidence-based research, namely, methodological success.
Beginning with an explicit expression of concern about the failure of the majority of RCTs to produce statistically significant findings, over the length of the HIV epidemic, for assessing the efficacy of biomedical prevention technologies, Padian et al. (2010: 621) explain that only six out of a total of 37 at the time of their writing had achieved ‘demonstrated definitive effects on HIV incidence’. ‘Demonstrated definitive effects’ are statistical differences between the product and control arms, irrespective of what the effects suggest about the product or, indeed, the methodological design of the RCT. This exclusive interest in a statistical difference is made explicit in the authors’ mention of the trial of nonoxynol-9 gel for vaginal use. The trial is positively noted as one of the few to have achieved a demonstrated effect. But it is also well known – if not infamous – for the manner in which it did so. As the article notes, without additional commentary or reflection, a 50% increase in HIV incidence was able to be demonstrated because the intervention, nonoxynol-9, increased vulnerability to the virus (Padian et al. 2010: 624). Insofar as the article is explicit in its aim to examine ‘the design, implementation, and contextual considerations that may limit detection of a positive or adverse effect in HIV prevention trials’, some might argue that the question of harm or benefit – that is, the type of effect – was not relevant to its discussion. But, if so, it is not difficult to draw the conclusion that a demonstrated difference in numbers is what matters, and not the experience of the effect.

It is, however, the authors’ complaint about ethical requirements that concerns me particularly, as it underscores the strange nature of what I am suggesting has come to matter in the logic of biomedical of science. The following quote from the authors poses the question of what is ethical when carrying out an RCT in low-and middle-income countries, while making clear that the pursuit of a biomedical solution supersedes other considerations:

The ethical issues of offering enhanced HIV prevention services in the comparison arm must be weighed against the ethical issues of lengthy and expensive prevention trials that provide the control group with an unsustainable level of prevention services that does not reflect community standards. Further, such trials may jeopardize our ability to identify and
offer participants and at-risk individuals around the world additional effective HIV prevention options […] in most [RCTs], risk-taking behavior was reduced in both [intervention and control arms]. Some of this change may be attributable to enhanced prevention services offered in the trial (Padian 2010: 631).

In short, it is evident that caring for trial participants is seen to be at a cost to research findings. To put this more bluntly, the non-biomedical or relevant designated social – here, research participants – is a resource only for achieving a demonstrated effect. And a risky resource at that. Despite what we might assume to be the intended beneficiaries of medical science, in the above weighing of the difficulties faced by RCTs, research participants are responsibilised for potentially undermining the method either by: (i) those in the control or placebo arm not contracting HIV during the research, thereby failing to provide a comparison with the trial product; or (ii) by not complying with the requirements of the protocol which might well generate evidence achieved in a manner qualitatively indifferent to their HIV vulnerability.

THE AWFUL AND WONDROUS CREATIVITY OF INFECTION

Having shown how the endeavour of dealing with infectious disease holds to a narrow conception of the social and how this provides a resource for science, I now want to consider whether the very notion of infection might lend itself to a rethinking of biomedical problem-making. To pursue this question, I propose to hold in suspension the desire to deem ‘infection’ a purely deductive force. To do so, I need to offer one final empirical example, an explanatory statement by the World Health Organisation (WHO 2014) on HIV/TB co-infection:

People infected with TB bacteria have a lifetime risk of falling ill with TB of 10%. However persons with compromised immune systems, such as people living with HIV […] have a much higher risk of falling ill. People
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who are co-infected with HIV and TB are 21 to 34 times more likely to become sick with TB.

Although at first reading, the extract may appear to speak only of the destructiveness of the association of HIV and TB, I propose that we pause on how this concern follows from the manner in which these infections jointly achieve their destructiveness. The two different infections are said to affect each other within the milieu of a body that is necessary to their complex dynamic. Moreover, their respective differences within this milieu create conditions conducive to the other. To backtrack a little, their modes of entering into the milieu are distinctly different: TB by breath, HIV by bodily fluids. But nonetheless, the two achieve an advantage for each other as they become together as multi-morbidity, and with a multiplying of effects. Indeed, it is precisely the conception that the body-with-infection – bacterial (TB) or viral (HIV) – can be further differentially transformed while retaining or holding an enduring distinctiveness of the other that contributes to the current patterning of drugs (their molecular composition) and the sequential ordering of their usage: treating first TB then HIV co-infection (McShane 2005).

Without discounting the complexities and problems that might be raised in relation to treating HIV/TB co-infection, and perhaps along the lines of Brotherton’s earlier comment on HIV antiretroviral drugs, we could say that the above description of infection effects is not so out of character with Race’s effort to provoke thought on the ‘togetherness’ of sex, drugs and HIV prevention. To put this another way, it seems that the above description by the WHO of infection as a mode of ‘togetherness’ speaks, in part, to a relational conception of infection. Indeed, the description is not entirely at odds with Alfred North Whitehead’s notion of infection as integral to relationality and endurance:

That which endures is limited, obstructive, intolerant, infecting its environment with its own aspects. But it is not self-sufficient. The aspect of all things enter into its very nature. It is only itself as drawing together into its own limitation the larger whole in which it finds itself (Whitehead cited in Stengers 2011: 156–57).
Infection is, as Stengers elaborates in relation to the above quote, a ‘holding-together’ (2011: 158) and, as such, a determinate shaping of a dynamic existence. It pertains, as Whitehead proposes, to all modes of endurance, including viruses, bacteria, dosing and bodies, as well as those we might regard as non-animate such as rocks but also, and no less, to human thought. All ‘prehend’ or, in less technical terms can be said to feel or grasp. Prehending the world is integral to the processes by which, for Whitehead (1978), the creativity of transformations and endurances happen. The success of this process is, as Stengers (2011: 158) states, ‘a co-production between this being and “its” environment’. Taking up this notion of infection, Martin Savransky (2016: 141) describes the process as requiring a speculative response: ‘the milieu feels [sic] the invention and the invention the milieu, [such] that a transformation of both [sic] might take hold in a way that cannot be fully anticipated [my emphasis]’. With hindsight, this resonates well with the unanticipated events of all four infections, and also with biomedical intervention: new modes of HIV transmission in the co-production of a milieu that involves sex, antiretroviral drugs and viruses (Auerbach and Hoppe 2015), emergent TB drug resistance (Zignol et al. 2012), and also the continuing toll on human life as a consequence of the Ebola epidemic (Clark et al. 2015).  

Certainly, the want of a technoscience solution of drugs, vaccines, containment and so on that presumes an infection may be brought to a finite end may be difficult to resist. But without disregarding what are known as biomedical achievements, a solution is a static affair whose closure is only possible to the extent to which the focus follows the threads of a labyrinth-like prevailing biomedical thinking. This focus may misguide us away from a productive sociality to the narrowly prescribed social for biomedical intervention that I have criticised in this chapter.

But there is another dimension to the notion of infection made available by Whitehead that both Stengers and Savransky illuminate above. And this dimension is the crux of what I want to raise in reference to the pervasive work of scientific knowledge and practice. That is the prevalence of modes of knowing and practice that are in themselves an achievement of infection, yet whose possibilities for a more attentive, nuanced thinking are subsumed in the
orchestration of a problem-making that all too readily becomes a problem of the narrowly prescribed social. To put this another way, if we accept the proposition that infection is the work of a co-adaptation achieved through the situated or ‘grounded’ prehendings of the entities involved (and these may extend beyond what may be observed), then the dull, detracting social of biomedicine may well be attributed to the lure of biomedical promise and assurances. This is a lure that vectorises a mode of sense-making that falls well short of a sociality in which all entities are active in the creativity of the future (Whitehead 1967; 1968; 1978). Moreover, it does so by a logic that understands itself apart from the work of infectivity, which it claims as merely its object and not in connection with its process. Feeling or prehending are not merely concepts for expanding the logic of modern science, but for reflecting on its drawing together a sociality cultivated in the scientific endeavour.

**CONCLUSION: REPOSING THE PROBLEM**

Insofar as the achievements of biomedical science are generated in the varying endurances and transformation of objects, the latter cannot be held distinct and deficient or lacking unless only contingently. If we recall the examples of the nonoxyl 9 trial where the unwanted and unexpected novelty of infection emerged in the form of a vulnerability to HIV; or where dosing compliance may be superseded by events of an entirely different order than those held to matter by biomedicine, as observed by Race (2013), the problem is not foremost deficiency or lack. Rather it is the contribution of other elements that have come into existence with a differential degree of co-adaptation or togetherness. Such events are not absences; on the contrary, they are creative and demand a response that remains attentive to what they bring forth.

In sum, it is not the infectiousness of viruses and bacteria alone that make for a social conceived as necessarily subject to biomedical intervention. Rather, we might say, it is also the infectiousness of scientific thought orchestrated through a host of uncontested events, all too briefly sketched here: authoritative media reporting; conference circuitry whose triumphal accounts of biomedicine mesh

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well with the want of spurious promises about the future; high-ranking scientific journal publications; and, not least, lauded methods of inquiry indifferent to the ‘non-scientific’. While viruses and bacteria are doing well to achieve a ‘hold’ or ‘co-adaptation’, so too, it can be said, has biomedicine achieved, through an infection of ideas (and, therefore, analogous to its viral and bacterial objects), a hold that constitutes a social made insubstantial as the site and source of no more than a given or potential deficit.

This hold of biomedicine remains delimited in its grasp or feeling for other modes of ‘holding together’, modes that might otherwise be considered for the possibility of more preferable consequences of health and medical intervention. In contrast to the current mode of biomedical problem-making, if the aim is to intervene in the consequent killer effects of infectious disease and, as I suggest, resist analogy with the feeding of human flesh as the solution to cancer, the notion of infectivity may have something to teach us. By not posing it as a given problem of a social or, indeed, a biological/biomedical object, distinguished as these are along disciplinary lines within health and medicine approaches, it might be that new territory for thinking about infectious disease may be availed.

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**NOTES**

1. Although living flesh could be said to refer to the use of stem cells, my reading is based on a more commonplace understanding of flesh as human life.
2. For an account of the contributions of Alan Brotherton, see Race and Stephenson (2016).
Elaboration on this claim is provided in a Wellcome Trust report (see Wellcome, 2017).

For details of this damage, see CDC Report on Microcephaly & Other Birth Defects (no date).

Since the Ebola epidemic in Guinea, Liberia and Sierra Leone, the World Health Organisation (WHO) has reviewed its response process and the need to consider better humanitarian approaches. The WHO Secretariat’s response to the Report of the Ebola Interim Assessment Panel August 2015 (WHO 2015) serves as one example, although considerably more is offered by the anthropologists who raised key concerns about the Ebola response during the epidemic (for detailed commentaries during and post- the epidemic see Somatosphere <http://somatosphere.net/tag/ebola> [accessed 3 May 2018].

See Epstein’s account of how difficult it was to raise the spectre of an unusual disease that came to be known as HIV until it had been laboratory evidenced.

See McGoey (2015) for a complex study on the influence of philanthropic funding and the scientific bias of the Bill and Melinda Gates Foundation.

See Johnson (2012) for an account of Clinton’s speech.

A detailed discussion of this method can be found in Michael and Rosengarten (2013) and Savransky and Rosengarten (2016).

Reports of a host of effects are now being reported. These include, for example, painful and mobility limiting arthritis, vision-threatening eye inflammation (uveitis) and mental health difficulties, all transmitted through the fluids of semen and breast milk (Beeching, Fenech, and Houlihan 2014; Vetter et al., 2016: e8s).

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