Table of Contents

Mens sana in corpore sano (or keep taking the tablets)

ByAndrew Goffey

The West's war on fat, free radicals, toxins and bacteria knows no such thing as a bridge too far: health and the perfect body enjoy absolute loyalty from their human footsoldiers. In the fight to keep our biological enemies at bay, the immune system is represented as the ultimate back-up system. But what is it really? And what are the politics of immunology, its parent science? **Andrew Goffey** makes a visit to the clinic

A recent report in a broadsheet newspaper that a favourite holiday destination in Thailand promises eager tourists a week of colonic irrigation offers a potent image for the fate of the ethics of self-governance under global multinational capitalism. The caput mortuum of decades spent as an avid consumer in the West is sluiced into a South-East Asian bucket, leaving you and your intestines free to jet back West to accumulate another year of crap. Beneficiaries of this process report – after a feeling of faintness – a sense of enormous well being. Which is hardly surprising, given that the fat which can clog the intestine from decades of consumption sometimes gets so thick that the weight of one's bowels has been known to shoot up to around 40lbs.

I mention this vignette not to shock or to condemn – although there is something a little perverse about the geopolitics of it all – but to make a point about the almost neurotic medicalisation current techniques for the care of the self testify to. It is not so much the curiously solid links between the anally retentive dynamics of capital accumulation and the bourgeois concern with the clean and proper which needs emphasis. A technique of the self which involves washing out your insides the way that you might wash a car on a Sunday morning (if you had one) or unblock a sink, although not an entirely surprising development, shows us a strangely empty concept of the body. Other examples suggest that this is not an isolated phenomenon: the pill popping antics of vitamin munchers anxious to boost 'their' immune system; Michael Jackson, or Montgomery Burns from The Simpsons, both of them with Howard Hughes-type phobias about germs; the National Socialist regime in 1930s - '40s Germany and their obsession with the health of its people…All point towards the pervasive medicalisation of identity. The British media and political elite's recent willingness to focus public energies onto the state of the National Health Service only confirms the issue. In fact, technologies of government here might suggest that being ascribed a medically informed identity (being 'normal' is a reputedly positive clinical condition), and being constantly enjoined to manage your own health, are functional weapons in capitalist crisis management.

I would not of course claim to be the first to have noticed this phenomenon, or wish to be interpreted as saying that the odd bit of internal hygiene or reform of the NHS is necessarily a bad thing. For starters, Michel Foucault's identification of bio-power as the primary form in which power exercises itself in contemporary society has already led a generation of researchers in the human sciences down the path which I have been trying here to signpost. And that certain social actions can have unintended consequences or occur within a framework unknown to the actors themselves will surprise few social scientists – this is the main lesson of Max Weber's work on The Protestant Ethic and the Spirit of Capitalism. More pointedly, the spread of AIDS and the consequent highlighting of a supposed norm of health of which it would be an apparently monstrous contravention shows quite clearly what an 'epidemic of signification' we have been subjected to, and has itself almost certainly had some role to play in the current intensification of medical policing. Not so much has been said, though, about the sciences that play such a key role in defining the substrate of the clean and healthy body, and determine the operations that can be performed on it. Foucault himself – his early work The Birth of The Clinic, The Order of Things and his identification of bios as a focal point for the exercise of power notwithstanding – had little to say about the life sciences, and preferred to confine his attention to the

human sciences.

However, in an exemplary work, the Italian philosopher Giorgio Agamben has explored some of the ramifications of the development of modern biopower, and given us food for thought when it comes to assessing the state of play in the life sciences. Agamben's argument is that 'We are not only animals in whose politics our life as living beings is at stake, according to Foucault's expression, but also, inversely, citizens in whose natural body our very political being is at stake.' It is, he further contends impossible to undo the strict interlacing of the naked biological life (or zoe) and the cultural form of life (or bios), for once and for all times. Instead, he says, we would do better to 'make of the biopolitical body, bare life itself, the place where a form of life which is entirely transposed into bare life, is constituted, where a bios which is nothing but its zoe is instituted' (Giorgio Agamben, Homo Sacer: Sovereign Power and Bare Life). Agamben believes that in so doing, a new field of research will open up, one beyond the limitations to be found at work in the disciplines which have hitherto attempted to think something like a bare life. It is an open question as to how this new field of research will eventually look. However, the convergence of the biological and the political in modern immunology might give us some suggestions about an answer.

The links between the self and the political is not an affair of simple 'discursive articulation', as some people would profess to believe, any more than it is a particularly new one. Whilst the self is certainly something defined in language, it is also something produced physiologically. In the 19th century, Nietzsche, for one, was not only disinclined to think of the self as peaceful coexistence – witness the prevalence of the themes of war and combat in his writings. He was also very much inclined to emphasise the physiological dimensions of European culture's morbid disorders. Freud, as is well known, took a keen interest in the defensive approach of the ego to forces beyond its control. In his 1895 Project for a Scientific Psychology, Freud's approach is based on the quantification of energy flows, and not the interminable hermeneutic question of 'what it all means'. Immunology has a background curiously congruous to Nietzsche's physiological accounts of strength and weakness. Although the discovery by Edward Jennings in 1798 of the smallpox vaccine had been suggestive of the mechanics of the immune system, it was not until the 19th century, with the growth of public health reforms, that modern immunology really came into being. The astonishing efficacy of the practice of vaccination was strong evidence for the existence of a remarkable 'system' for protecting organisms from infection. The immune system seemed somehow to 'know' what was not good for the organism and thence to destroy it. Quickly, a paradigm for research developed, around the work of Paul Ehrlich, which adopted a 'humoral' (read: chemical) explanation for how the system functioned. Later, in the 20th century, research drawing on the findings of biologists into genetics, conferred on immunology the privilege of being the 'science of self-nonself distinction.'

The remarkable successes of immunology should not obscure what is effectively its less palatable inscription within the modern apparatus of biopower. This makes it a prima facie candidate for critical analysis. It is not simply because of its background in the very public health reforms of the late 19th century which Foucault has flagged as evidence of the paradigmatic shift in the exercise of power. Nor is it the fact that its innocently scientific status – bolstered by its phenomenal success in treating the most publicly worrying of illnesses – has contributed to a sense of its benevolent neutrality as science (and hence also, in the Foucauldian optic, to its efficacity for power). We cannot ignore the fact that, like many other subfields of the life sciences, immunology benefited enormously from advances in genetics in the late 1950s (although it wasn't until the 1980s that some of the fundamental genetic mechanisms of immunological functioning were experimentally confirmed). An innocent enough fact perhaps, but of great importance for the economy of the science's explanations, explanations which demonstrate a remarkable congruence with 'scientific' developments elsewhere.

According to Giorgio Agamben, one of the noteworthy facts about National Socialism is that its politics developed through a decisive mobilisation of science in a synthesis of biology and economy. One Otto von Verschuer, Professor of Genetics and Anthropology at Frankfurt University, argued, in a semi-official publication called State and Health, that doctors should see 'in the state of health of the population, the condition for economic profit' and that the 'oscillations of biological substance and those of material equilibrium generally go hand in hand.' Arguing against the view that the biopolitics of the Third Reich should be seen uniquely under the epithet of 'racism', Agamben suggests that the extermination of the Jews must be seen in a perspective whereby the 'protection of health and [the] struggle against the enemy have become absolutely indiscernible.'

If Agamben is correct, it is somewhat disquieting to find a parallel convergence between immunology, politics, and metaphysics. In its routine arguments about the fundamental function of the immune system, immunology uses a language which is loaded with political and metaphysical connotations. The immune system is primarily a system of defence against attack, immunology seeks to explain how it is that the self can differentiate between friend and enemy, or between molecular compounds which are non-lethal and those foreign pathogens which are lethal. Of course, no one is saying that this isn't what the immune system does. But it is curious to see how the immune system is immediately inscribed within the political and the metaphysical. Since there is no intrinsic property to mark out biochemical elements as belonging to this organism rather than another, to talk of a self at a chemical level is clearly a wishful metaphysical fiction. And to make sense of what is going on at the molecular level, by using the language of the political – friend and enemy, the foreign body – raises questions about what it is, exactly, that immunology is doing.

Pointing out these parallels is not to claim that immunology is a racist discourse. But we shouldn't see in its language the innocent play of metaphor. The political aspects of a science are to be sought in terms of its dominant structures of explanation. In combination with the excess of meaning supplied by the language of defence and attack, foreign bodies and so on, these structures produce a set of resonances between immunology and explicitly political discourses which makes their affinity more than a matter of mere chance – to think otherwise is to ignore the disturbing evidence Agamben has collated about National Socialism.

The dominant modality of immunological discourse was effectively fixed by the Nobel prize winning research of the British immunologist Sir Macfarlane Burnet. Whilst antibodies were discovered in Germany in the 1890s, it was Burnet who came up with the idea that the immune system 'discriminates' between self and nonself, and in so doing, he perpetuated the already well-established notion that the immune system defended the pre-existing identity of an organism. Immunology was, in his view, founded on an 'intolerance of living matter for foreign matter,' and 'clonal selection theory' was his solution to the problem of explaining how it is that lymphocytes and the antibodies they produce, being capable of recognising and destroying any molecular compound, don't routinely destroy the elements which compose the organism in which they reside. In its typical reactive operation, when the immune system detects a pathogen, it responds by the mass production of clones of an antibody which can bind with and hence neutralise the invader. The efficiency of this process is improved firstly by an extensive process of the somatic mutation of the DNA which codes for antibody production. Rearrangements of the inherited (germ-line) genes which account for the production of antibodies enables an organism to generate an enormous variety of different antibodies (a sort of selection mechanism within the organism itself). It is also improved 'second time around', i.e. if the system has been exposed to a pathogen once previously it effectively maintains a memory trace of that pathogen and so can respond more quickly. This was a fact understood from the inception of immunology, and it contributes to the popularity of those strands of research which consist in isolating the response of the system to specific, precisely defined pathogens.

Burnet's clonal selection theory argued that clones produced by the immune system which would recognise, and so attack the self were simply eliminated during the organism's development by a learning process. Subsequent to his claim, all sorts of peculiar experiments were devised as a way of confirming this theory – because the system learned to discriminate between self and nonself, you could, in theory, fool it. More importantly, the theory seemed to drive a wedge between a self, understood as pre-existing the immune system and defined on a presumably genetic basis, and the nonself. Because the role of the immune system was that of defending a pre-given identity, through a process of learning, the identity of the self somehow fell outside of history and became a tabula rasa, an immunological bare life protected by a set of unconnected 'individual' defence responses.

Burnet's theory in effect prescribed, or rather sanctioned the dominant trend in immunological research, which is that of the investigation of an unconnected set of discretely causal mechanisms. Just as some take metaphysical comfort in locating the gene for genius, or for aging, or for schizophrenia, or for homosexuality (the implication – oh praise eugenics – being that you might then simply turn it on or off), so too research which promises to locate the cell or cells responsible for combating a particular illness imparts ontological security. Your identity is safe with us, say the pharmaceutical companies, thoroughly caught up in this process of reification.

It is not difficult to see why this conception of the immune system has been so successful. Recall that immunology really took off as a result of public health reforms, and that it was bolstered by the practice of vaccination. Vaccination exemplifies the 'discrete' logic of explanation, and provides a miraculously dramatic confirmation of the powers of the system. Some historians have suggested, though, that prior to vaccination programmes, the immune system showed itself to be far less effective a defence mechanism – without the artificial stimulation of antibody production by vaccines, the immune system was relatively powerless against the kinds of epidemics which have ravaged the world throughout the centuries. In the late twentieth century, the example of AIDS has shown that it is infections with a low degree of 'pathogenicity' which can be most lethal. In any case, it is difficult to maintain an unequivocal role for the immune system – it has been known since the early 1970s, for example, that whilst the immune system can destroy tumours, it can also, under certain circumstances, promote their growth.

Perhaps immunology has been asking the wrong kinds of questions – the absence of any cure for AIDS, for example, suggests that the dominant framework is ill-adapted to the kinds of immune problems accompanying HIV. Over recent decades, there has been a growing realisation amongst a minority of immunologists that the inconsistencies of clonal selection theory vis-a-vis the available evidence, coupled with a tendency to do the wrong kind of research, might indeed be leading immunology in the wrong direction.

In the first instance, there is evidence to suggest that the existence of autoantibodies (ones which will react to self) are not quite as exceptional as had been thought previously. Such autoantibodies can be found in both the maternal immune repertoire, which is inherited from the child organism's mother, and in its 'induced' repertoire, which develops in ontogeny. The existence of these autoantibodies has often been downplayed – we can now see why: they are inconsistent with the predominant explanation of how the immune system works and what it is for.

Secondly, if the immune self is a uniquely genetic inheritance, how is one to explain that a neonatal immune system can recognise as 'foreign' antigens derived from its parents? And how is one to explain the existence of non-negligible levels of immune activity in organisms isolated in a germ-free environment?

Since approximately the middle of the 1970s, there has been an alternative view of the immune system, one which explores its role in a very different way. In 1974, Niels Jerne published a paper which proposed a theory of 'idiotypic networks' as a way of explaining the anomalies. Idiotypic network theory suggested, in direct opposition to clonal selection theory, that not only does the immune system interact with itself, but that this is its primary activity. Whilst the defensive struggle against the enemy displays the remarkable power of the immune system (presumably delegated by the sovereign self) it misunderstands the peculiar organisation of the immune system's capacities.

Idiotypic network theory can be glossed as follows: some cell type is recognised by a specific variety of lymphocyte, or clone-producing antibody (a B-cell, in the jargon. Call it A). This stimulates the production of more clones to attack the initial cell type. These clones themselves are then recognised by another B-cell (call it B), which produces its own clones. The clones of B down-regulate the activity of the clones of A, but themselves stimulate the production of C clones by yet another B-cell. This chain, or 'cascade' of events eventually closes on itself (when the clones of A recognise and down-regulate clones produced by lymphocyte Z, say). In this scenario, the immune system does not primarily defend a pre-existing self, but actually constitutes that self as the ongoing product of a series of interactions in a complex molecular environment, an idiotypic network, in other words. Further, the defensive efficacy of the system becomes easier to explain: the system doesn't need to be able to specifically recognise nonself in order to launch an attack. Because the network primarily recognises itself it only attacks what it cannot assimilate. To put it another way, the defensive function is a consequence of the system's weakness, and not its strength.

The differences between these two positions may seem slight, but Jerne's theory forces us to acknowledge the processes by which the immune self is constituted. Available evidence suggests that the gap between the genetically hardwired and the learned is not as clear or as large as clonal selection theory had suggested, and that autoantibodies can function both as part of an idiotypic network as well as against non-network elements. The 'self' is, in this view, an historical product, and not some essence which might delegate its powers to the immune system. More interestingly, the immune system is no longer seen as being essentially bound up with the 'fight against the enemy'. Whilst it still, clearly, has a role to play combating infection and so on, this is not its primary role, and we should understand it on the basis of a different logic. But then what is the immune system for? If it didn't arise in evolution to fight bacteria and to protect the preconstituted individual, what did it evolve for?

Controversial research based on a speculative reconstruction of the evolutionary steps leading from organisms without an immune system (invertebrates) to those with, has suggested that the immune system might have had a role in actually constituting the individual as a unit of biological selection. In this respect, it served to unify a set of different cell types into a coherent unit. This theory is controversial, and it is true to say has not gained the assent of the immunological community at large, and yet it does provide an interesting explanation for a fundamental problem in evolutionary theory – that of explaining how the individual organism actually came to be. And, if the individual vertebrate organism came to be, it can of course come not to be.

Contemporary language of the care of the self undoubtedly has many sources, and the self as such has components from all over. But it is difficult not to notice how often the language of private property appears. Your sexuality, your politics, your immune system (which of course you regulate by regular boosting, don't you ?). Poor proles that we all are nowadays, poor subjects of a biopolitical constitution, being commanded to exercise proprietorial control over an immune system (or a sexuality, set of political options and so on) which in fact defines us is not just a grammatical error. If the parallels I have suggested between the dominant understanding of the immune system and Agamben's theorisation of bare life are accurate, there is much more than a linguistic sop to a lack of

power at stake. To forget that ‘you’ are a complex chemical ecology in which what can’t kill you can only make you stronger, might give you a limited stake in a restricted biological-economic exchange, but it won’t make you immune from the fascist life. Think about that the next time you are in the chemists.

Andrew Goffey <a.goffey AT mdx.ac.uk> is a lecturer in Media, Culture and Communications at Middlesex University. He writes about philosophy, science, and culture, and is currently researching for a book on Gilles Deleuze