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8. Writing the 'Great Proteus of Disease': Influenza, Informatics, and the Body in the Late Nineteenth Century

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When I began to draft this chapter, in April 2009, a computer worm called Conficker began to download information from the internet onto the machines that it had infected. Worms take advantage of information transfers to move between machines and are capable of replicating themselves from within the systems they infect. Although not harmful in themselves, they are often used to distribute malicious code that alters the performance of an infected machine.¹ As soon as Conficker began downloading, information spread over the micro-blogging site *Twitter* <<http://twitter.com>>. Various news sources around the world, both specialist technology sites and traditional news vendors such as the BBC, broke the news on *Twitter*, and their followers promptly reproduced this with short messages ('tweets') of their own. Within four days, however, discussion on *Twitter* was dominated by a different kind of virus, as news of the first death caused by an outbreak of swine 'flu was reported in Mexico. In each case, *Twitter* distributed news just as other bodies, those of computers and people, propagated viruses of their own.

In this chapter I argue that the influenza pandemics of the late nineteenth century were simultaneously biological and cultural phenomena. However, I do not mean that the impact of the biological virus caused a range of cultural effects or even that the diverse cultural effects of the virus prompted it to appear in a variety of material forms. Rather, because of its indeterminate material nature influenza was able to infect both the human and the social body simultaneously and move between both. News, computer worms, and biological viruses all exploit informational networks but none are purely information. Each has a material supplement, whether it is language, computer code, electrical signals or chemical compounds, that dictates how it moves information through culture. Just as the behaviour of Conficker and the

messages on *Twitter* are determined by the way in which each is coded and executed, so the ontological status of biological viruses such as influenza limits their transmission and effect. You cannot catch the 'flu by reading about it and the possibility of a computer virus affecting biological systems remains a fantasy of science fiction.ⁱⁱ Yet information, essentially immaterial yet dependent upon material media and the systems that connect them, operates on and across the borders of minds, bodies and machines. Although conceptualized as independent of the media upon which it relies, information does not exist in the abstract, only as part of an object in some sort of system of communication.ⁱⁱⁱ As information, by definition, is capable of transmission, of transcending its material manifestation, the extent to which the news, computer worms and biological viruses differ from being purely information is the extent to which they can be attributed bodies of their own.

When influenza appeared in 1889 it was expected that it too would be attributed a body. Robert Koch's announcement of the *Tubercle bacillus* in 1882 not only demonstrated that germs were the causative agents for disease but that it was also possible to isolate and identify them.^{iv} Indeed, Koch's four postulates, which still provide the criteria for establishing a causal link between a microbe and a disease, were predicated upon the idea that diseases are caused by discrete entities that could be isolated from and grown separately to diseased tissue.^v Without a demonstrable causative agent for influenza, it was difficult to cohere the diverse symptoms with which it was associated to a single named condition and impossible to delimit its modes of transmission and contagion. Highly contagious but seldom fatal, and causing a range of symptoms that were identical to those of other conditions, influenza could pass between bodies and also enter into them. All viruses, whether electronic or biological, challenge the autonomy of individual bodies by foregrounding both their interconnectedness and their porousness: however, the indeterminate materiality of the late nineteenth-century influenza virus permitted it to exploit a range of media, whether human or nonhuman, and so infect biological and informational systems simultaneously. Although reading about the 'flu was not the same as having the 'flu, it appeared that it could be spread by communication networks as well as human contact. Like a computer virus, influenza utilized the networks that connected disparate bodies and exploited human activity to reproduce: however, as an infection of information, it was not restricted to electronic systems, but instead became as immaterial as information itself.

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The electronic communication of information, whether human-readable or machine-readable, is considered to be one of the defining characteristics of the information age. The speed with which electronic networks function permit humans and machines distributed across the globe to interact almost instantly. This fantasy of proximity has been fostered by the development of web 2.0 technologies that not only make it easier to create content for distribution online, but also to liberate information from the applications with which it was created. Although the popularity of web 2.0 resources such as *Flickr* <www.flickr.com>, *Facebook* <www.facebook.com> and *Twitter* is due to the connections they facilitate between users, their power lies in the way they aggregate and order the information that users provide (often for free). By recording the behaviour of their users over time, such resources offer back an alienated, disembodied and fractured version of the self that differs from postmodern subjectivity in that it lacks any material repository. When allied with the more familiar effects of the information age – instant communication, electronic financial transactions, digitization, and digital simulacra – it seems that it is not just the signified that is deferred, but materiality itself.

This has led some to overdetermine the boundary between the dematerialized present and the material past. In his *Living on Thin Air* (1999), Charles Leadbeater set out the transformations that he believed were necessary for societies to thrive in the electronic age:

We have to go forward because if we retreat we end up with gridlock. Our societies and governments often seem paralyzed, or at best enfeebled, in the face of economic and technological change that outstrips their capacity to respond. We are weighed down by institutions, laws and cultures largely inherited from the industrial nineteenth century; yet we confront a global economy driven by an accelerating flow of new ideas and technologies which are creating the industries and products of the twenty-first century. We have welfare systems which are impervious to reform, parliamentary systems which are recognizably Victorian and schools which still resemble their nineteenth-

century forebears. Imagine fighting a modern war using cavalry: that is the position we are in.^{vi}

The Victorian here stands for an industrialized past populated with things in contrast with a present confronted with the rapid electronic transfer of information. The association of materiality with history corresponds to a blinkered version of globalized culture that is blind to the production and circulation of commodities. The postindustrial West is presented as the location of (post)modernity, while the industrial activity that sustains it is pushed to the margins and associated with a less-civilized past.

The emphasis on the immateriality of information at the expense of the materiality of informatics also elides the mechanism through which the past influences the present. Existence through time is always predicated on the material. Our inheritance is always embodied, whether this is in terms of genetics or property, and the Victorian institutions that Leadbeater condemns as anachronistic survive precisely because they are structures that are intended to embody memory.^{vii} What this material inheritance demonstrates, in diverse contexts ranging from spiritualism to science and aesthetics, is that the Victorians, although an industrialized society, were not only concerned with the immaterial, but also its relation to the material world.^{viii} The resurgence of interest in nineteenth-century material culture has gone some way to restoring the role of objects in culture but often stresses their cultural meanings, particularly as commodities, at the expense of their material properties.^{ix} The two, of course, are never wholly divorced as material form has semiotic potential but, as Bill Brown has noted, materiality, the ‘thingness of objects’, only becomes apparent when ‘they stop working for us’.^x The edges of things both account for the integrity of objects, allowing them to exist in the world, and their resistance, as they are literally what return our touch. To become carriers of information, the edges of objects must be overcome so that they function as nodes in networks rather than things. Objects in informational networks thus transcend their boundaries in order to influence one another. In this way, information plays a part in defining the limits of objects and determining what meaning they have for us. Not only does information help determine the properties of its material media, but it also hints at other objects of which we might not be fully aware.

The etymology of the word ‘virus’ captures its material ambiguity. Joost Van Loon argues that the ‘virus has always functioned as a label for that which cannot be named otherwise, a remainder of the known world, and a reminder of nature’s inherent unintelligibility’.^{xi} The word ‘virus’ carries with it an imponderable supplementarity, similar to the way ‘thing’ describes that aspect of materiality that always lies beyond the human world.^{xii} Derived from a Latin word meaning ‘slimy liquid’ – a definition that lived on in English as an obsolescent term for semen – the meanings of ‘virus’ prior to the emergence of its contemporary biological definition were all associated with poisonous discharges.^{xiii} As harmful substances, viruses are conceived as being alien to the body, but their malicious influence, affecting the body from within, makes their boundaries difficult to establish. Just as Brown’s description of things foregrounds their liminal status, hovering ‘over the threshold between the nameable and unnameable, the figurable and unfigurable, the identifiable and unidentifiable’, so the virus both names something that can be transmitted but at the same time is yet to be defined.^{xiv} The body’s immune system must identify viruses as other, marking them so that they can then be destroyed. This is usually understood in informational terms, with chemical signals establishing the boundaries between self and other within an otherwise self-contained system; but what is destroyed is, nonetheless, an object.^{xv} The same process underpins the detection and destruction of computer viruses. Like biological viruses, they too are parasitic – pieces of alien code that insert themselves into an application so that they can be executed as part of the system’s legitimate processes – and virus protection software works by checking code against indices of either ‘healthy’ programs or known threats in order to establish what to destroy. As Stefan Helmreich argues, although protection against computer viruses is frequently understood in biological terms (my virus checker puts suspected viruses into quarantine), the extension of biological language to electronic systems exposes its ideological foundations. In an age of networked computing, it is not clear what constitutes the body that needs protecting: is it the workstation, the network, or the web as a whole? Although immunology might fall back on the integrity of the body, human bodies, of course, are also networked.^{xvi} The immune system establishes the difference between self and other, but it does so from within the body, suggesting that not only are our bodies connected, but that they also overlap. Information – as language, pattern, or difference – might be the means in which bodies overcome their

boundaries and influence one another, but it is also the means through which immune systems establish what those edges and so what those objects are.

When the outbreak of influenza in St Petersburg was announced in *The Times* on 25 November 1889, its correspondent linked it to the sanitary conditions of the city and Russia as a whole.^{xvii} However, by the 3 December the rapid distribution of influenza around the Russian Empire prompted predictions of its spread into the rest of Europe.^{xviii} The previous documented outbreak in Britain had been in 1847 and the fullest account of the disease was Theophilus Thompson's *Annals of Influenza* from 1852, which provided a natural history of the disease from 1510 to 1837. Despite its high morbidity – early reports stated up to a third of the population of St Petersburg had been afflicted – the low number of deaths resulting from influenza reassured British commentators that its effects, should it spread, would not be serious. In fact, *The Times* suggested that 'in the interests of science, its arrest in Russia would probably be a misfortune; for, if it should reach more scientific countries, it will certainly be subjected to a more searching examination than is otherwise at all probable'.^{xix} The improved sanitary conditions that had prevented the spread of cholera from across the channel during the recent outbreak in France would also protect the population from the more severe effects of influenza. In addition, confidence in contemporary microbiology meant that the outbreak offered the opportunity to learn more about the germ that was suspected to be its cause. As *The Times* stated:

To the scientific pathologist, indeed, the reappearance of a disease which has not visited this country for forty-two years would be a matter of the most lively interest calculated to excite in him emotions parallel to those with which a sportsman would engage in the pursuit of some previously unknown game, or an archaeologist, before mummies were vulgarized, in the task of unrolling one.^{xx}

Its reappearance offered the opportunity to transform the symptoms of influenza from occulting surface phenomena into demonstrable marks of presence. Like a spirit summoned for a séance, influenza would be made to perform subject to scientific scrutiny so that it could be allocated a place in the known material universe.

Influenza reached Britain late in December 1889. It is difficult to give a precise date because it was not clear when influenza actually became manifest. The word was already in use to describe a range of catarrhal conditions and, particularly in winter, there were a range of drugs advertised that promised to cure it. However, once the severity of the outbreak in Russia began to be appreciated, publications began to take news of its spread from the news agencies and their own correspondents around Europe. Reuters, for instance, ran an 'Influenza Special' that supplied updates on the progress of the pandemic to the British press. London was one of the last capitals to experience influenza, so most people's knowledge of the outbreak was limited to such reports. *The Times* was the first British paper to publish news of the outbreak in St Petersburg on the 25 November 1889 and it continued to print reports of influenza from Reuters and its own correspondents.^{xxi} By the thirtieth it was reported to have spread around Russia;^{xxii} by the 9 December it was in Berlin^{xxiii} and Copenhagen,^{xxiv} and by the 10 December Reuters reported it was also in Austro-Hungary.^{xxv} By the 11 December reports appeared confirming cases in Paris.^{xxvi} On the 13 December *The Times* dismissed rumours that it had broken out in Chiswick, West London, as 'fictitious terrors',^{xxvii} but the following week reported outbreaks as far apart as Madrid,^{xxviii} Belgrade,^{xxix} Amsterdam and New York.^{xxx} Readers in Britain, therefore, had five weeks to trace the progress of the pandemic from city to city, but did so with the creeping awareness that influenza travelled along the same routes and utilized the same technologies as the news they were reading.

When influenza became imminent in London, the press found itself in its usual position of warning about the dangers of rumour while being responsible for peddling it.^{xxxi} The Prime Minister, Lord Salisbury, was one of the first British victims of the pandemic. Answering the question whether he actually had influenza, the *Pall Mall Gazette*, in its gossip column, 'To-Day's Tittle Tattle' replied:

That is the question on everyone's lips for the next day or two. As nobody seems to know exactly what the influenza is, it must be still more difficult to say whether any particular patient has it or not; and there is thus a boundless field for speculation and gossip.^{xxxii}

Lori Loeb has shown how influenza challenged the authority of the medical profession.^{xxxiii} Unable to pronounce definitively as to what influenza was and

reduced to suggesting treatments that might ameliorate its symptoms rather than provide a cure, medicine could offer little more than the commercial market for drugs.^{xxxiv} The press was well placed to benefit from this situation, able to sell news of the pandemic, disseminate medical advice, and advertise a wide range of drugs. The *Pall Mall Gazette*, for instance, used a ‘lady reporter’ to pose as a patient in order to obtain medical advice from four leading practitioners. Although the paper justified the publication of this advice on the basis that the public needed information, it scandalized the medical profession as it not only revealed that their prescriptions were all slightly different and generally confined to treating the symptoms rather than the germ itself, but also destroyed the market for their expertise by providing access for the price of a newspaper.^{xxxv} The manufacturers of drugs, on the other hand, were well situated to capitalize on rumours of the approaching pandemic and soon began to tailor their advertisements accordingly. As drug manufacturers did not need to reveal their ingredients unless they contained an ingredient controlled by the 1870 Pharmacy Act, they encouraged the spread of information about both the disease and their drugs. On the 4 January 1890, for instance, shortly after the first cases were confirmed in London, an advertisement for Salt Regal in the *Illustrated London News* claimed, under a headline of ‘THE COMING EPIDEMIC! THE COMING EPIDEMIC!!’, that it was a ‘Preventive and Safeguard.’^{xxxvi} Salt Regal was advertised in a wide range of publications, including the *Pall Mall Gazette*, the liberal weekly *Truth* and the evangelical weekly *Great Thoughts*. At the peak of the pandemic, its manufacturers ran a subsequent advertisement that claimed the ‘users of SALT REGAL have hitherto escaped the EPIDEMIC’, reminding readers once more that ‘SALT REGAL [was] a Preventive and Safeguard!!’ and offered a range of testimonies as evidence.^{xxxvii}

The rapid diffusion of information about influenza – whether news, gossip, commentary or advertisement – was difficult to separate from its spread through the bodies of those infected. Its high morbidity coupled with its low mortality meant that experience of the ‘flu was widespread while very few people died from the condition. There were four waves of influenza between 1889 and 1894 (January-February 1890; April-May 1891; January-February 1892; December-January 1893-4) and it is estimated that a third of the adult population of England, Wales and Ireland suffered at least one attack over these years.^{xxxviii} There were further outbreaks in 1895 and 1899-1900, but all these late nineteenth-century occurrences of influenza tend to be

overshadowed by the 1918 outbreak that was responsible for an estimated 20 million deaths worldwide.^{xxix} Unlike the 1918 outbreak, with its high rate of mortality, these earlier pandemics were characterized by a low mortality rate and most deaths were attributed to associated conditions such as pneumonia. For instance, during the first outbreak in 1889-1890, only 599 deaths were attributed directly to influenza in London, rising to a maximum of 2205 during the more severe outbreak in April-May 1891. Even when the other deaths in which influenza was thought to have contributed are added, these totals only reach 2800 and 5800 respectively.^{xi} In a city of around 5 million of which up to 3 million caught the disease, the probability of dying from a bout of influenza was very low.^{xii} Unlike cholera, which had a high mortality rate regardless of the age of those afflicted, influenza tended to be more dangerous for the elderly, the poor, or those susceptible to other respiratory diseases and so was not taken quite so seriously as a threat to public health. That said, the more lethal second wave did prompt some concern. In the *Spectator*, for instance, fears were expressed for public order as government was by the 'comparatively old' and, in *Leisure Hour*, Alfred Schofield reminded his readers that even though influenza had a low mortality rate (he cited 1%) its high morbidity meant that it had still killed more than cholera.^{xiii} The overall consensus, however, was that influenza was something that simply had to be tolerated.

Prior to the outbreak in Britain, the *Lancet* had noted that its rapid spread meant that it had 'no geographical limitation, it is apparently uninfluenced by season or climate, and its virus travels over sea and land in a manner so baffling and contradictory to the ordinary conceptions of the transmission of infection as to render any simple explanation of its nature almost impossible'.^{xiii} As the symptoms of influenza resembled so many other illnesses it was difficult to determine whether it was present in a population until it was sufficiently widespread and then, of course, it was too late to study its propagation. Equally, once influenza was mooted as a cause of illness within a population, there was concern that symptoms caused by other diseases would be misattributed to it. The only sign of its presence was its rapid communication. An attack of influenza typically lasted two to four days, with a period of recovery lasting another two weeks. As each wave of the pandemic lasted approximately four to six weeks, with the number of cases steeply declining towards the end of this period, the bulk of cases occurred simultaneously.^{xiv} No biological organism, it was believed, could travel this fast and, despite various suggestions as to

the transmission of either the germs of influenza or some sort of force to activate them, many accepted the outbreak as another manifestation of late nineteenth-century mass culture.^{xlv} Influenza rapidly became known as the ‘fashionable epidemic’ and there were suspicions that some complaining of the influenza were either exaggerating the symptoms or faking them entirely.^{xlvi} For instance, the *Illustrated London News* ran a full-page cartoon that depicted a number of people either taking advantage of the influenza to indulge or blaming it for the consequences of overindulgence (figure 1). Andrew Wilson, who contributed its science column entitled ‘Science Jottings’, grudgingly devoted his ‘Monthly Look Around’ to the raging pandemic on the basis that from ‘peer to peasant everyone appears to regard this topic as the only subject of interest’. Wilson, a lecturer on zoology and comparative anatomy at the Edinburgh Medical School, had little to tell his readers about the scientific underpinnings of the pandemic:

The science of influenza is summed up by saying that doubtless it is a germ-produced disease. Only on the theory that its germs were diffused far and wide can we account for its spread.^{xlvii}

Instead, he speculated that influenza has been ‘used as an excuse for the breaking of unwelcome engagements’ and that ‘the next comic song of the music-halls will be founded on the epidemic, with a chorus beginning “Have you got it?” or some equally asinine refrain’.^{xlviii} Rather than give the microbiological context for the pandemic and ignoring the (false) announcement that the germ had been discovered in Vienna, Wilson instead attacked the medical professions concerns about self-doctoring, which he termed ‘old wifeism in medicine’.^{xlix}

It was to ‘The Ladies’ Column’ of the *Illustrated London News* that one turned to receive useful information about influenza and advice on how to treat it. In the same issue as Wilson’s remarks, Florence Fenwick Miller stated that influenza had ‘proved not so trifling and half-imaginary a complaint as was at first hoped’ and then gave statistical information as to its effect on the death rate in London.¹ She claimed that Doctors had ‘always been clever at concealing their helplessness against disease under a cloud of imposing language’ before explaining the terms ‘microbe’ and ‘bacillus’:

It is a somewhat appalling idea that each human system forms a world, in which a whole myriad of microscopic animalculae are born, live by their own exertion, perhaps form kingdoms or republics, hoard wealth, prey on each other, rear offspring, and depart from life after what seems to them a prolonged existence unaware that the microcosm in which they have passed their span is not the universe! But though there is an awful poetry in this reflection, it does not help us to a knowledge of how to keep out, or how to exterminate after having let in, those microbes which are inimicable to the body's wellbeing.^{li}

Miller's evocation of the microbiological sublime emphasized the porousness of the body. For Miller, it was medicine's responsibility to intercede into the subvisible realm and provide the immunological system that would protect the autonomy of the individual, but it was the responsibility of her readers ('us housewives') to 'to tackle the difficulty, so to speak, from the opposite side, and take care that our patients are given all that they can take to maintain the general strength to fight against the deductions made from it by the microbe army'. Rather than target the microbe, Miller suggested nourishing the body, reasserting its outside, and so substituted effective nursing for ineffective doctoring.^{lii}

For Miller, the microbiological sublime offered a way of imagining the body in the world that did not depend on its visible limits, but she nevertheless argued that modernity, particularly information technology, had put these limits at risk. She imagined that 'the enterprising microbe has travelled with speed, perhaps by train or by telegraph, to other parts of the kingdom' and warned that 'we must pay the price of our advantages, and the trains which carry us and our letters so rapidly about serve also, apparently, for the quick conveyance of the destructive microbes of disease'.^{liii} What is interesting is that, despite her evocation of influenza as a microbe, it here travelled like information, like letters on trains or electrical signals over wires. In the body too, influenza seemed to move rapidly, affecting different parts simultaneously and preventing the symptoms from appearing as indexical marks that could delineate the hidden microbe. Sir Morrell McKenzie, one of the physicians caught by the *Pall Mall Gazette's* undercover reporter, attempted to account for the action of influenza in the *Fortnightly Review* shortly after the second wave in 1891. He explained that 'influenza is the very Proteus of disease, a malady which assumes so many different forms that it seems to be not one, but all diseases' epitome, and its symptomatology includes almost everything, from running at the nose to inflammation of the brain'.

He insisted that the cause of the disease was ‘a living germ of some kind’ but, in order to account for its multiple effects, suggested that it had an ‘electric affinity for the nervous system’.^{liv} Rather than attack parts of the body, influenza instead exploited the means through which they were connected. McKenzie compared the effect of a bout of influenza to an electrical storm, explaining that the ‘extraordinary disturbance in our telegraphic system sometimes caused by a thunderstorm is as nothing compared with the freaks played by the living conductors in the human body if anything throws the governing centres out of gear’.^{lv} Affinity expressed a structural relationship as well as an attraction and the analogy between the nerves and telegraph was an old one. In suggesting that influenza might act upon the nerves, McKenzie tantalizingly hinted that it might also move through them.

Neither the social body nor the human body provided the friction of materiality for influenza, and so it behaved like an informational flow rather than the microbe it was widely suspected to be. As signal, rather than thing, its effects signified its presence but could not bring the microbe itself into being. Its edges, in other words, eluded the various technologies that attempted to make it an object of discourse. Not only was it difficult to establish causal relationships between the effects of influenza and whatever caused it, but there was no ‘it’ for such indexical marks to point towards. Competing discourses attempted to provide contexts within which influenza could cohere, but the result was multiplication and ethereality rather than a material object articulated through chains of signification. N. Katherine Hayles distinguishes between embodiment and the body in order to account for the tendency to dematerialize the body in postmodern thought. For Hayles embodiment is ‘contextual, enwebbed within specificities of place, time, physiology and culture that together comprise enactment’, whereas the body is the product of discourse, an idealized form that is ‘always normative relative to some set of criteria’.^{lvi} In the case of the late nineteenth-century influenza pandemic, there were many embodied experiences of influenza but there was not a coherent, unified, bounded construction of the body that could provide the discursive terrain within which the microbe might substantiate itself. Not only did the virus move through and between human bodies, but it also seemed to move with the news, on trains, through the post or over the wires. Rather than simply manifest itself in the human body, its disparate effects situated influenza across a variety of discursive terrains simultaneously. For Hayles, the tendency to reduce the body to informational flows in postmodern thought – to

become posthuman – is due to the neglect of the specific instantiations of embodiment. However, for influenza the reverse was true. As its symptoms were not confined to the recognized edges of human bodies and its spread not restricted to the recognized ways in which such bodies were connected, it could not materialize as an objective entity independent of its individual instantiations. Instead, it became like information, able to move through what appeared to be different bodies and so reveal the hitherto concealed connections between them.

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A week before the conference that prompted this collection of essays there was a terrorist attack at Glasgow Airport. Two men drove into the airport terminal, crashing their vehicle and setting it on fire. In a news report that followed the incident, a newsreader for Channel 4 News, stood in front of footage of the still-burning car, explained that it remained a crime scene as it could provide forensic evidence despite the evident damage. In the same report, reference was made to hard disks and mobile phones that had been obtained from the suspects' homes. These objects, we were told, continue to carry records of communications somewhere within them even though the data might have been deleted. To reinforce his point, the newsreader reminded his audience that during the investigation into the murders in Soham in 2002, police obtained a breakthrough when the accused was confronted by evidence that one of the victims sent a text message (SMS) from near his house. In all these cases information was not conceived as immaterial and transitory, passing through the media that it employed, but instead as something that left traces that could be recovered. Just as material media create noise, affecting the signal, so the signal affects the media, depositing its traces.

Information is never encountered outside of objects and it is the objects that provide the discursive contexts within which information must be read. In terms of forensics, it is not only the task of the scientist to extract information, but the correct information, leaving the rest as part of the object. Reading, too, is a process which differentiates between the code that is to be deciphered and all the other meaningful aspects to a text. In each case an interpretive process decides what remains as part of the object and what should be liberated from it. Just as the immune system reacts to identify and objectify the thing that threatens it, so too do institutions, whether this is

medical science, trying to define the microbial nature of influenza by restricting it to the body, or the State using forensic science to identify which of its citizens represent a threat to its security. Such institutions exist to establish limits to the agency of people and things, and they do so by attributing influences to discrete entities.

Influenza, as various nineteenth-century commentators noted, is etymologically linked to the idea of influence. *The Times*, for instance, told its readers that word originated in Italy and was connected to older traditions that associated instances of the plague with the movements of astral bodies.^{lvii} Late nineteenth-century space was not empty but provided the medium through which things – and indeed people – could influence one another. The concept of the ether, and the electromagnetic principles for which it furnished an explanation, provided a mechanism for discrete objects to overcome their material edges and affect, through emissions, vibrations, and fields, other bodies around them. The various social fads and fashions, advertised and promoted in the press, that swept through the newly constituted middle-class masses, demonstrated how people could be enthralled by products as well as political or social movements.^{lviii} The evangelical weekly *Great Thoughts*, for instance, reminded its readers that influence was not, in itself, good or bad, but was simply made more pronounced by modern technology. ‘There is far more intercourse and sympathy between men now than in the distant past’, the anonymous author warned, ‘whether we will or not, we are always affecting those around us, always transmitting good or evil’.^{lix} Just as it was up to the individual to modulate their influence so as to benefit others, it was also for the individual to determine which influences should be accepted and which should be rejected. However, it was not always easy to distinguish between good and bad influences, or even to determine where the self ended and influence began. The same technologies that exposed the subject to influence also distributed subjectivity much in the same way as telepathy permitted contact between minds.^{lx} Influences could be seductive and individuals were weak: the trial of Oscar Wilde testified to the virulent influences that underpinned decadent aesthetics, while also pruriently guarding against their further transmission.^{lxi} Even within the self, subjectivity was understood as the performance of boundaries: for Freud consciousness was the result of the repression of influences; for Myers it was simply those influences of which we were aware.

Harold Bloom, in his *Anxiety of Influence*, claimed that ‘Influence is *Influenza* – an astral disease. If influence were health, who could write a poem? Health is

stasis'.^{lxii} The unhealthiness of influence tells of its disregard for boundaries; yet, in acknowledging influences as other, as outside, or as belonging to a particular entity, we also identify the boundaries that they transgress. For instance, influence both challenges the idea of the subject as rational and self-determining while also, through the notion of repression, providing the mechanism for establishing its boundaries and its continuity. What is important to note is the reflexivity of this process: influences are only detectable at the point of contact between entities; one might influence the other, but it is the other's resistance that defines its contours. Objectifying something establishes its edges, but this applies to whatever is doing the objectifying as well.

The various effects of influenza, distributed across and between disparate discursive bodies, could not function as signs in an economy of presence and absence.^{lxiii} They indicated that influenza was present, but could not reify this presence into an object with edges of its own. Although the dominant explanation for its effects was some sort of microbe, the experience of witnessing its spread made it appear like an early computer virus, infecting informational systems so that they spread it further. Computers are vulnerable to viruses as they run executable programs, often delivered over networks. However, these programs are not pure information but are encoded electronic signals and, to defend against them, software discriminates between those influences that are permitted and those that must be excluded. As the late nineteenth-century influenza manifested itself in diffuse and often exclusive discursive terrains, it was difficult to delimit the edges of its influence or restrict it to a particular material environment. The use of the term 'viral' to describe the transmission of something through culture is a relatively recent addition to the *OED*, first appearing in 1989 with reference to viral marketing (*OED*). The nineteenth-century influenza pandemic demonstrates that what makes viruses viral is their indeterminable materiality. By failing to delimit its influences and so reify its cause, the 'flu was able to exploit its interfaces within and between bodies in order to mutate from a thing to a message and pass virulently through culture.

Chapter Eight

ⁱ Eugene H. Spafford, 'Computer Viruses as Artificial Life', *Journal of Artificial Life* 1.3 (1994), 249-65.

ⁱⁱ See for instance Neal Stephenson's novel *Snow Crash* in which a narcotic in a virtual world called the metaverse distributes a virus that affects both the virtual avatars and the people who control them. My thanks to Jay Clayton who alerted me to this classic cyberpunk novel.

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- ⁱⁱⁱ N. Katherine Hayles, 'Virtual Bodies and Flickering Signifiers', in Timothy Druckery (ed.), *Electronic Culture* (New York: Aperture, 1996), 259-60.
- ^{iv} Thomas D. Brock, *Robert Koch: A Life in Medicine and Bacteriology* (Madison, WI: SciTech Press, 1988), 117-39.
- ^v Brock, *Robert Koch*, 179-82.
- ^{vi} Charles Leadbeater, *Living on Thin Air: The New Economy* (London: Penguin, 1999), 23.
- ^{vii} Bruno Latour, *Pandora's Hope* (Cambridge, MA: Harvard University Press, 1999), 151-56.
- ^{viii} Marina Warner, *Phantasmagoria: Spirit Visions, Metaphors and Visual Media into the Twenty-First Century* (Oxford: Oxford University Press, 2006).
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