CHAPTER 6

THE PROGRESSIVE AND CORROSIVE IMAGES OF SCIENCE

6.1 Background: if history has taught us anything ...

This Chapter sets the frame of discussion as regards *heterosexual* AIDS. Bear in mind that although Acquired Immune Deficiency Syndrome (AIDS) is reportedly a new disease, the systematized body of knowledge about the disease is essentially classical. By systematized body of knowledge I have in mind the complex mixture of beliefs and recurrent themes that accompany scientific learning about the disease. The body of knowledge associated with AIDS is a reification of knowledge derived from the historical past. Likewise, knowledge about heterosexual AIDS in Africa is classical. The so-called African hypothesis of AIDS, the idea that AIDS in Africa is imbued with some typical manifestations, is derived from particular common myths and assumptions held over many years about the continent. I argue that the narrative of so-called African AIDS (see below) can be located within an understanding of 19th-century European iconography of Africa. Knowledge about African AIDS is derivative from knowledge established in the colonial past.

Henceforth, this chapter maintains a strong historical perspective, because there is a connective tissue linking AIDS to the primordial past. This sense of history is vital for an understanding of AIDS as narrative, as a 'cultural epic', as drama and spectacle, and of course, as a biological or biomedical condition. Furthermore, a historical perspective provides some interesting insights into what I call the apocalyptic or metaphoric depictions of AIDS; it is paramount for an understanding of media's

representations of AIDS as a "modern-day Black Death", a sort of a plague that is capable of wiping out virgin populations in its wake. Therefore, this chapter offers a precursory map of consequent chapters.

6.2 The virtues of the Industrial Revolution

In 1902 the editor of the daily newspaper *Nation* wrote:

> The scientist appears akin to the medicine man ... the multitude thinks of him as a being of quasi-supernatural and romantic powers ...[1]

I could not agree more with our newshound. Today, scientific experts are commonly regarded as the "high priests of popular faith".[2] They are viewed as creative individuals who search for solutions to seemingly complex problems facing the human world. Embedded in our contemporary culture is the notion of a 'star scientist' – akin to the 'visible scientist' discussed in the previous chapter. The star scientist is either a member of the highly acclaimed National Academy of Sciences, winner of the Lasker Award, or a Nobel laureate. Moreover, admission into the National Academy of Sciences or winning a Lasker Award or a Nobel Prize is all too frequently regarded as an act of supreme success, a remarkable achievement. By sharp contrast, the modern scientist's predecessor, namely the 19th-century bacteriologist, hardly embodied the connotation of superstardom. Stardom or celebrity cannot by any means be associated with Jenner and his associates. Nonetheless, judging by their noble pursuits and their major accomplishments, the 19th-century bacteriologists were undoubtedly the repositories of abundant knowledge (see below).

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[1] *Nation*, 16 January 1902.
[2] A Liversidge 'The limits of science', *Cultural studies* 6(3) (Fall 1995).

Running concurrently with the major scientific breakthroughs wrought by Jenner *et al* were of course the great transformations engendered by the Industrial Revolution. On the economic level, the Industrial Revolution made possible the emergence of a large number of factories which mass-produced goods for sale rather than for subsistence.[3] The kinds of economic change wrought by the Industrial Revolution also facilitated the expansion of transport and communication lines, and in turn, the expansion of national and international markets and the distribution of manufactured goods and capital.[4] Furthermore, increased factory-based production led to the restructuring of occupations and increasing division of labour.[5] Old ways of farming were discarded; new 'farming paraphernalia' were introduced on a large scale, for example fertilizers and tractors.[6]

The modernization of Western Europe in the 19th century was accompanied by what many demographers refer to as the 'demographic transition'.[7] The demographic transition is no more than the matrix of change from high birth rates and high death rates to low death rates and low birth rates.[8] At that time Western societies moved away from very high rates of natural increase in population numbers to very low rates of increase. European societies also experienced a decline in terms of levels of mortality. In many countries death rates declined much faster than birth rates, ushering in what Notestein would call an "incipient decline".[9] These demographic changes can also be explained by fundamental changes on the levels of behaviour, attitudes and

[3] C Thomas 2000, *Theories of social change, Only study guide for SOC201-Y* (Pretoria: University of South Africa), 10.
[4] Ibid,10.
[5] Ibid,10.
[6] Ibid,10.
[7] See for example J R Weeks 1999, *Population: an introduction to concepts and issues* (Belmont: Wadsworth), 93.
[8] Ibid, 93.

beliefs. Furthermore, they can be traceable to major improvements in health standards, education and nutrition. A low growth potential (measured by low levels of mortality and fertility) also accomplished an increase in life expectancy.[10]

Hence, in the 19th century Western societies moved through a predictable sequence or a determined process of change from underdevelopment to modernization and industrialization. However, the developing world continued to experience a high growth potential. In great measure, this was due to the absence of the main catalyst for change, that is, industrialization. High levels of fertility and mortality became one of the irreducible characteristics of Third World societies. According to Webster,[11] underdevelopment in the developing world was also a function of primordial attitudes and values. Thus, economic growth and progress in the Third World hinged on the opportunities these countries have to increase their means of subsistence.[12]

From this understanding, modernization in Western societies can be explained by the impact of the Industrial Revolution. Also emblematic of these societies was a remarkably high standard of living; in addition, Western societies became heavily dependent upon sophisticated techniques of disease prevention. The process of modernization was also underpinned by key institutions such as public hospitals and clinics. The modernization of the First World also bequeathed an epidemiological transition.[13] Whereas before the 19th century infectious diseases were the major causes of mortality, chronic or degenerative diseases now became major killer

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[9] Ibid, 93.
[10] Ibid, 93.
[11] For a more detailed look at the main ingredients of modernization theory, see A Webster 1988, *An introduction to the sociology of development* (London: Macmillan), 133–156.
[12] Weeks, *Population: an introduction*, 93–99.
[13] Ibid, 93–99.

diseases.[14] For example, heart disease and cancer, both of which affect mainly older people, became the major causes of death. In great measure these diseases stem from modern lifestyles: high fat diets, excessive smoking and drinking, lack of exercise and environmental pollution.[15] The causal link between modernization and declining levels of mortality in the West can be summed up as follows:

> ... as societies modernise, socio-economic and health conditions improve so that those conditions that were conducive to the spread of infectious and parasitic diseases are eradicated. In other words, owing to better sanitary living conditions, improved medical technology and better nutrition, the threat of infectious diseases decreases. As mortality declines, life expectancy at birth increases ... so that increasing numbers of people survive into older age. With larger cohorts surviving into old age, the numbers of people exposed to the risk of chronic, degenerative disease increases, so that this becomes the major cause of death ...[16]

Therefore, whereas during the pre-industrial phase pestilence and famine loomed large and the life expectancy at birth was between 20 and 30 years, the epidemiological transition heralded a phase of receding pandemics, where there was an increase in life expectancy.[17] Western governments also participated in the provision of health care; health care was seen as a 'public good'. Government officials undertook to intensify the on-going battle against infectious epidemics by intervening in the public domain, by announcing preventive measures. But while public health policy became invested by a *preventive* component, the search for a *cure* became the principal vocation of Jenner and his associates. Clearing up or explaining the cause and nature of disease became the overarching goal of the 19th century 'men of light'.

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[14] Ibid, 114–129
[15] BBC Education 2000. *Medicine through time: vaccines and the treatment of disease*.
[16] Du Plessis, *The sociology of population*, 65.

6.3 Premier contributions of Jenner *et al*

The idea I am advancing here is that the decline of infectious diseases in Western societies can be attributed not only to the process of modernization or the demographic transition, but also to human agency: the creative involvement of Jenner and his colleagues in lowering people's risk to death. Low levels of mortality in the West can be explained by the complex interplay between structure (large-scale changes brought about by the Industrial Revolution) and agency (the active participation of human actors, namely the 19th-century bacteriologists, in the natural world). To set the context of discussion as regards the role of human agency in the fight against infectious diseases, it is perhaps necessary to look far back in time.

A century before Jenner, Pasteur, Koch, Fleming and Lister, Dutchman Antony Leeuwenhoek invented microscopic instruments that made possible the discovery of microbe types called bacteria.[18] Leeuwenhoek discovered that bacteria existed not only in the bodies of humans and animals, but even in rivers and lakes.[19] Unlike viruses, bacteria are living organisms. They can grow on their own. Leeuwenhoek's discovery, although it provoked the professional interests of many of his colleagues, fell short of advancing the idea that bacteria can cause disease, since at the time there were no standard rules or logical procedures according to which this point of view could be authenticated.[20] The task of finding out whether bacteria can cause disease fell to men like Jenner, Pasteur, Koch, Fleming and Lister. Jenner and his associates undertook to prove not only the existence of these living creatures, that is, bacteria, but

[17] Ibid, 65.
[18] Duesberg, *Inventing the AIDS virus,* 32.
[19] Ibid, 32.
[20] Ibid, 32.

also their pathogenesis (their disease-causing nature). At this point, I think a brief biographical information is necessary for subsequent discussion.

Edward Jenner (1749–1823) worked as a doctor in Berkeley, Gloucestershire.[21] In the early part of the 19th century Jenner discovered a vaccine against a deadly disease called smallpox (in the 19th century smallpox supplanted the 18th-century bubonic plague as a leading killer of men – and women[22]). Following Jenner's discovery, vaccination became free for all infants (from 1840). And in 1980 the World Health Organization declared that smallpox had been eradicated throughout the Western world,[23] thanks to Jenner's ingenuity and creative genius. Shortly after Jenner's death in 1823, Frenchman Louis Pasteur (1822–1895) leapt into the foreground. Pasteur worked as a microbiologist in Jura, France.[24] In 1867 he became the first scientist in the world to successfully demonstrate that infectious diseases are caused by germs or microbes.[25] Significantly, this discovery laid the foundation for the germ theory of disease. In 1881 Pasteur went on to develop vaccines for cholera, anthrax and rabies.[26]

Bacteriology was given another major impetus by the prodigious efforts of another man of light, the German scientist Robert Koch (1843–1910). Koch became the first scientist in scientific history to convincingly prove that bacteria can cause human disease. From observing samples of animals and people, Koch discovered that bacteria can hardly be found in healthy organisms such as animals; for Koch, bacteria can be found in abundance only in the blood of diseased animals.[27] Koch proposed not only that a microbe must be cultured from the diseased body and that it must cause the

[21] BBC Education 2000, *Medicine through time*.
[22] Ibid.
[23] Ibid.
[24] Ibid.
[25] Ibid.
[26] Ibid.

same disease when injected into another animal[28], but also that it is absolutely necessary to convincingly demonstrate its presence,

> ... without exception and that its number and distribution are such that the symptoms of the disease are fully explained.[29]

Stated otherwise, a bacterium can only be proved beyond reasonable doubt to be the cause of disease when every diseased individual has large amounts of the germ growing in their body tissues; *and a single exception would be enough to pronounce the microbe innocent of causing the disease*.[30] To prove his hypothesis correct, Koch did some work on tuberculosis, one of the leading killer diseases of his time. This research turned out to be the most fruitful. Using Leeuwenhoek's microscopes, Koch was able to isolate and culture a bacterium causing tuberculosis. The year was 1882. About his phenomenal discovery, Koch stated:

> In all tissues in which the tuberculosis process has recently developed and is progressing most rapidly, these bacilli can be found in large numbers ... As soon as the peak of the tubercle eruption has passed, the bacillus becomes rarer.[31]

In 1884 Koch spelled out three criteria for proving that a microbe can cause disease:

- First, the germ must be found growing abundantly in every patient and every diseased tissue.

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[27] Duesberg, *Inventing the AIDS virus*, 33.
[28] Ibid, 34.
[29] R E Lapp 1965, *The new priesthood: the scientific elite and the uses of power* (New York: Harper & Row), 39.
[30] Ibid, 34.
[31] D C Greenwood 1958, *Solving the scientist shortage*, (Washington DC: Public Affairs Press), 23.

- Second, the germ must be purified or isolated and grown in the laboratory.
- Third, the purified germ must cause the disease again in another host.[32]

These rules came to be known as 'Koch's postulates'. They laid down standard procedures to be followed when trying to prove that a particular germ is capable of causing disease. Some few years later, Koch added another postulate (the fourth postulate): once the purified germ has been proven to be pathogenic in another host, he taught, it must be retrieved from the inoculated animal and cultured anew.[33] Using these criteria, Koch was able to identify 21 more germs causing different types of disease in both human and animal species.[34] In 1902 Koch won a Nobel Prize for developing the anti-toxin that destroyed bacteria.[35] Four years later (1906) the germ theory of disease was given another spark by Alexander Fleming.

Fleming was a young doctor based at St Mary's Hospital in London.[36] Like Pasteur, Lister and Koch before him, Fleming was a germ killer! It is important to note, though, that the foundation for Fleming's work was staged in 1871 by Joseph Lister. Lister discovered that moulds that grow on cheese and fruit can make microbes become weaker. In 1928 Fleming did the same experiment on staphylococci, a type of bacterium that would make a wound poisonous.[37] He too grew a mould. He discovered that his mould was effective against bacteria and that it was capable of causing a range of diseases, chief among which were anthrax, diphtheria and meningitis. Much later, when he added more of the same mould, he managed to develop it into the antibiotic

[32] Ibid, 23.
[33] Ibid, 23.
[34] BBC Education 2000, *Medicine through time*.
[35] Ibid.
[36] Ibid.
[37] Ibid.

penicillin.[38] Today this antibiotic is commonly regarded as being particularly effective against bacteria that make wounds septic or poisonous.[39]

It hardly needs saying, therefore, that modern science owes a great debt of gratitude – for the control, prevention and treatment of infectious diseases – not only to the Industrial Revolution, but also to the major scientific breakthroughs bequeathed by the classical scientists. The combined effects of the Industrial Revolution and the ingenious works of Jenner *et al* ushered in a scientific revolution of major proportions. The classical scientists, it could be said, constituted a 'cohort' of a special type. For one, they shared common goals and interests. What activated their major concern was the nature and cause of bacteria. They also shared a scientific background: they were nurtured in the traditions of bacteriology. In addition, they represented a particular facet of social history, a history marked by the great social transformations of societies. This cohort was raised in the era of infectious diseases, in the 19th century. And as we have seen, Jenner and his colleagues were truly successful in eliminating many of these human afflictions, particularly in the Western world. In the Third World, however, infectious or communicable diseases remain, as we speak, the No 1 killer diseases of humans.[40] Examples abound: flu, pneumonia, tuberculosis, malaria, measles, cholera, herpes, and syphilis.[41] Here large numbers of people also die because of poor living conditions. For instance, in the 1960s Zambia, a country of more than 3,8 million people living in scattered villages, became hamstrung in its efforts to vaccinate against smallpox. The consequence for this was a sharp increase (15 per cent) in the case-fatality rate [42] (see table 1.1).

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[38] Ibid.
[39] Ibid.
[40] See J R Weeks 1999, *Population: an introduction to concepts and issues* (Belmont: Wadsworth), 114–123.
[41] Ibid,114–123.
[42] 'Smallpox and its eradication,' 2001, *Communicable diseases and surveillance response*. Geneva, World Health Organization, 972.

Table 1.1 Zambia: number of reported cases and deaths from smallpox and case-fatality rates (1956–1973) and number of vaccinations performed (1964–1973)

Year	Number of cases	Number of deaths	Case-fatality rate (%)	Number of vaccinations
1956	576	52	9.0	..
1957	459	56	12,2	..
1958	210	21	10,0	..
1959	178	13	7,3	..
1960	350	31	8,9	..
1961	233	8	3,4	..
1962	210	4	1,9	..
1963	1 881	271	14,4	..
1964	2 214	189	8,5	1 657 330
1965	528	59	11,2	1 500 000
1966	63	10	15,9	1 535 634
1967	47	3	6,4	1 183 836
1968	33	5	15,2	1 365 514
1969	0	-	-	1 508 958
1970	2	-	-	1 525 511
1971	0	-	-	1 549 479
1972	0	-	-	1 400 000
1973	0	-	-	1 500 00

Courtesy of the World Health Organization (WHO) 2001.

High fatality figures can also be seen in Malawi, Mozambique and Southern Rhodesia. Between 1959 and 1972 these countries – put together – had a population of 18 million people, with a case-fatality rate of 5-15 per cent[43] (see table 1.2. below).

Table 1.2. Malawi, Mozambique and Southern Rhodesia: number of reported cases of and deaths from smallpox and case-fatality rates (1959-1972)

	Malawi			Mozambique			S Rhodesia		
Year	Number of cases	Number of deaths	Case-fatality rate (%)	Number of cases	Number of deaths	Case-fatality rate (%)	Number of cases	Number of deaths	Case-fatality rate (%)
1959	559	23	4,1	44	0	0	133	0	0
1960	795	64	8,1	14	0	0	12	0	0
1961	1 465	161	11,0	91	2	2,2	3	0	0
1962	634	69	10,9	69	4	5,8	15	0	0
1963	455	57	12,6	10,2	7	6,9	38	5	13,2
1964	720	55	7,6	243	24	9,9	200	15	7,5
1965	226	8	3,5	115	25	21,7	40	3	7,5
1966	88	2	2,3	19	6	31,6	35	0	0
1967	38	3	7,9	104	32	30,8	30	1	3,3
1968	61	7	11,5	145	15	10,3	10	1	10,0
1969	65	4	6,2	11	0	-	33	2	6,1
1970	39	1	2,6	0	-	-	6	0	-
1971	10	0	0	0	-	-	0	-	-
1972	-	-	-	0	-	-	0	-	-

[43] Ibid, 975.

In 20th-century South Africa smallpox also manifested epidemic proportions. For example, in 1969 the number of reported cases increased, accounting for about 10 per cent of all cases recorded in the whole of Africa that year.[44] And by the end of the year, 246 cases had been reported to the WHO.[45] The figures for sexually transmitted diseases (STDs) were also disproportionately high in Africa. In some parts of the continent, STDs were singled out as among the top five diseases for persons seeking health services; the WHO also reported at the time that an epidemic of STDs appeared in the years preceding the AIDS epidemic, just as it did among American gays.[46] One study revealed that as much as 20 per cent of Zimbabwe's urban population had an STD.[47] Yet another study showed that in 1981 10 per cent of Ugandans had gonococcal infections, in comparison with only 0,4 per cent of Americans and Europeans. Differences of similar magnitude were reported for syphilis and other STDs.[48]

6.4 Enter the 20th century: the 'star quality' in science

As we have seen, the battle against bacteria involved both structure and agency. New technologies bequeathed by the Industrial Revolution, coupled with sheer acts of personal will, made possible the major scientific breakthroughs of the 19th century. After the 'great quests' for bacteria in the 19th century, the 20th century saw another consensus emerging in science. Underpinning it was the idea that diseases are caused

[44] Ibid, 984.
[45] Ibid, 984.
[46] See for example Rushing, *The AIDS epidemic*, 59; F A Plummer, J Simonsen and D Cameron 1991, 'Co-factors in male-female sexual transmission of human immunodeficiency virus type 1, *Journal of Infectious Diseases* 163:236; and O Arya and F Bennett 1976, 'Role of the medical auxiliary in the control of sexually transmitted disease in a developing country', *British Journal of Venereal Disease* 52:116-121.
[47] Rushing, *The AIDS epidemic* 59.
[48] Root-Bernstein, *Rethinking AIDS*, 301–303.

by very tiny creatures living in the tissues of both humans and animals, namely viruses. The creators of the new consensus were called 'virus hunters' by the popular press.[49] The new men of light specialised in virology (as indicated in Chapter 5, virology is a branch of science which designates as its main domain the study of the genetic structure and pathogenicity of viruses). As the name suggests, the microorganism they studied was not a living creature (bacterium), but a nonliving and a much smaller organism, a virus. The first isolation of a virus (note that germ isolation is Robert Koch's second postulate) was done in 1892 by Dimitri Iwanowski. The Russian,

> … gathered fluid from tobacco plants suffering the mosaic disease. He passed this liquid through a filter ... to Iwanowski's surprise the bacteria-free filtered liquid easily made new plants sick with the disease.[50]

From my standpoint, what was truly remarkable about the great microbe hunt of the 20th century was that for the first time in the history of science human agency gained the upper hand. Virus hunters, like their predecessors, pioneered the germ theory of disease. What was so remarkably different about them, though, was their star quality. Not only were our 20th-century virologists superior in knowledge, they were also media stars. They achieved their fame, honour and prestige by using the media as an important vehicle of communication. One writer sums up their star quality so well when he states: "They were going to get a bad microbe, make a vaccine, find an antibiotic, cure it, and get a Nobel Prize."[51] Especially notable among these great men of stature were Wendell Stanley, David Baltimore, Howard Temin, Edward Kass, Ludwig Gross, Peter Vogt, Robert Gallo, Harvey Bialy, Harry Rubin, Robin Weiss,

[49] Duesberg, *Inventing the AIDS virus,* 69.
[50] Ibid, 69.

Luc Montagnier, Peter Duesberg, Maryon Essex, Don Francis, Carleton Gajdusek and William Haseltine. A great number of our virus hunters are known for their long tradition of involvement in the activities of the biomedical institutions discussed in Chapters 1 and 2, namely the Centres for Disease Control (CDC), National Institutes of Health (NIH), including its subdivision, the National Cancer Institute (NCI), and the World Health Organization (WHO).

It is also important to keep in mind that our virus hunters studied specific types of virus, commonly known today as retroviruses. At the time retrovirology became what Bruno Latour and Steve Woolgar would call a "mythology"[52] – a broad frame of reference that dictated the road they followed in their professional practices. Retrovirology constituted a paradigm, a mixture of beliefs. And one of these beliefs, which filtered through the prism of many scientific journals in the 1960s and 1970s, was that retroviruses are not cytoxical; in other words, they do not kill the cells they infect.[53] Retroviruses are intracellular or genetic parasites.[54] Hence, to survive they need the host; they are solely dependent on the *living* cell for survival. As a norm, retroviruses incorporate themselves into the genetic material of the living cell permanently. Unlike lytic viruses (that is, viruses invested with infective properties), they copy their genome not from DNA to RNA, but from RNA to DNA, by using an enzyme called reverse transcriptase.[55] This point is particularly important because it reveals the reason that they are called retroviruses.

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[51] Ibid, 69.
[52] B Latour and S Woolgar 1979, *Laboratory life: the construction of scientific facts,* (New Jersey: Princeton University Press), 54.
[53] Duesberg, *Inventing the AIDS virus,* 117.
[54] Ibid,117.
[55] Ibid, 119.

By the look of things, virus hunters are men and women invested with supreme achievements. For example, Wendell Stanley won a Nobel Prize for being the first scientist in the world to map out the genetic structure of viruses; Howard Temin and David Baltimore shared another Nobel Prize for discovering the enzyme reverse transcriptase; Robert Gallo won the Lasker Prize (reportedly a precursor to a Nobel Prize) for discovering the first human retrovirus, feline leukaemia virus or HTLV-1; and Peter Duesberg won the California Scientist of the Year Award for discovering the so-called oncogenes, that is, tumour viruses.[56] Against this background one can understand why our virus hunters acquired what Nelkin would call "mythic status".[57] Appellations such as 'idol' and 'smart researcher' are often used in reference to our mythical founders of retrovirology. Their mythic status was made even more believable by yet another common belief that came into vogue in the 20th century, that is, the belief in the objectivity, neutrality and progressive nature of science. The popular magazine *Newsweek* speaks directly to this point of view when it reports as follows:

> More than business or law or politics, science rests on the presumption of honesty in a quest for truth.[58]

Sociologist Michael Tracey also lends force to this reading when he writes:

> Here was being etched in rock the very basic assumption that we all share to a greater extent and which inevitably informs mediated discourse, that the modern physician

[56] Ibid, 89–130.
[57] D Nelkin 1987, *Selling science* (New York: W H Freeman & Co).
[58] *Newsweek*, 8 February 1982.

> will make all parts of our lives free from the suffering that was the lot of our ancestors.[59]

The idea of science as a vocation, as a progressive force offering all of the peoples of the world some profound hope for the future, also dates far back in time. It can be traced to the Enlightenment project of the 18th and 19th centuries. At the time the dominant idea was that science is capable of revealing profound truths about the nature of the social world we live in, that science is essentially a virtuous enterprise, a noble pursuit, an enlightened force, rather than a corrosive image (see also Chapters 1 and 10 for further reading). This positive narrative of science crystallized into a believable story by virtue of the great triumphs of the 19th century – the great triumphs over infectious diseases in advanced societies. Because the majority of virus hunters, like their predecessors, believed in the specificity of diseases, in the idea that human diseases are caused by germs, they were urged towards the thinking that all forms of disease are immune to culture or the social context. The scientific ideal was conceived of as a mystique. Science was idealized; it was seen as an "internal process insulated from social and even psychological influences".[60] Science was understood as a dispassionate profession, insulated from all of man's prejudices and parochialisms.

And despite many incidents of dishonesty and misdemeanour reported regularly in the media in which prominent scientists were found to be involved, science continued to retain its veneer or aura of superiority over other disciplines. Fraud was simply construed as an *individual* aberration.[61] The media complied with this rendering too. For the media all too often evoke what Nelkin would "moralistic metaphors" when

[59] See Professor Michael Tracey's inaugural lecture 1995, 'The making of the public mind' University of Stratford, England.
[60] *Newsweek*, 8 February 1982.
[61] Nelkin, *Selling science*, 26.

describing fraud involving scientists.[62] The media display a cast of mind that obfuscates structural issues in their coverage of scientific matters, he says. They desist from asking crucial questions regarding the scientific method as well as questions pertaining to the validity of certain assumptions often held to be true.[63] They cease to ask questions such as the following:

> Is the scientific method adequate? Does the peer review process offer enough protection against fraud?[64]

This deification or idealization of science has had certain negative consequences. First, it has created some kind of distance between the individual scientist and laypeople. According to Nelkin, paradoxically, "this obscures the importance of science and its effects on our daily lives".[65] Second, the romanticization of science paved the way for the use of science as a powerful source of authority in support of popular – but often unscientific – beliefs.[66] Undoubtedly, science has a 'dark side' too. Notwithstanding the greatest achievements of the last two centuries, many observers today readily accept that the scientific enterprise involves much less the rational pursuit of knowledge. They point to what one might call the 'corrosive images' of science, the tendency in science to regress to the mean! As Liversidge says, science has a "dim corner".[67] The romantic ideal of science fails to match the complex reality. Science is not always immune to culture, because sometimes scientific findings are hypothetical, uncertain and lend themselves to many interpretations.[68] Liversidge maintains that there is in science a "paradigm protectionism". Here he has in mind the idea that the

[62] Ibid, 26.
[63] Ibid, 24.
[64] Ibid, 15.
[65] Ibid, 15.
[66] Ibid, 26.
[67] Liversidge, 'The limits of science'.

men of light in science all too frequently tend to look inwards, they tend to look at the 'narrow picture', they tend to defend, sometimes at all costs, even the most unscrupulous of ideas because of self-interests. He adds:

> So much depends on epidemiology, the statistics of disease ... Scientists who cultivate these vineyards must go with what incomplete evidence they have. Opinions and informed judgements replace verifiable fact, and this room for interpretation opens a Pandora's Box of anti-scientific forces, from government interference to commercial influence and self-interest, whether unconscious or not ... All in all, science in practice is not always a gentlemanly business.[69]

Hence, our men of light sometimes make news not because they offer some interesting insights into the human condition, but because of the nature of their research studies.[70] Some research findings, it hardly needs saying, greatly appeal to the media because of their newsworthiness, their built-in dramatic quality. Take as a remarkable example the popular field of sociobiology. As you know, sociobiology suggests a correlation between genetic components and social behaviour.[71] Like all theories of evolutionary biology, models of sociobiology filter into public discourse (lay discourse) largely because they foreground such controversial sociological subjects as stereotyping, scapegoating, prejudice, ethnocentrism, discrimination, masculinity, femininity and, of course, racism. Sociobiology appeals to many journalists and their readers because of its controversial and debatable nature. No wonder that sociobiology has shaped a great variety of historical forces. For example, it has provided the scientific and political justification for Nazism, Fascism, and apartheid. Sociobiology is therefore more

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[68] Ibid.
[69] Ibid.
[70] Nelkin, *Selling science*, 28.
[71] Ibid, 29.

negative or corrosive at the more fundamental level: it dehumanizes.[72] It accentuates a range of connotations, connotations of racial inferiority, by singling out some groups as being inherently (genetically) inferior. Sociobiology tends to legitimize social inequalities; it tends to mask the power imbalance in society.[73]

6.5 The causative agents of cancer and AIDS

To the notion of a scientist as a 'superstar' and science as a 'progressive force' can be added yet another common belief that emerged in the 20th century, namely the belief that cancer, like bacteria and viruses, is infectious. Armed with this belief (and still buoyed by their triumph over polio in the 1950s[74]), virus hunters turned to cancer research. The 'period atmosphere' was the 1960s. Viruses cause cancer, so they argued. Cancer was caused not only by hereditary factors (human genes), but also by rare human retroviruses that attacked the blood.[75] The key reason that retroviruses were associated with cancer was the following: retroviruses are intracellular parasites, they are totally dependent on the host cell for replication. They replicate to allow for adaptation to new environments, different temperatures, different nutrients or different hosts.[76] The host cell provides the biosynthetic and energy-generating mechanism.[77] They therefore cannot survive outside the host's cell; they are essentially parasitic. *What is most important, although viral replication generally results in the death of infected host cells, replication by retroviruses does not*.[78] Retroviruses were thought to

[72] Ibid, 28.
[73] Ibid, 27.
[74] See Duesberg, *Inventing the AIDS virus*, 34.
[75] *New England Monthly*, June 1988.
[76] *New England Monthly*, June 1988.
[77] R S Chang 'Attributes of microorganisms', in P D Hoeprich, *Infectious diseases: a modern treatise of infectious processes* (New York: Harper & Row).
1987.
[78] Ibid.

be oncogenic or cancer-causing because, like cancer, they stimulate cell growth.[79] Because of their ability to replicate, they were implicated in most human cancers, including Karposi's sarcoma. For example, according to Myron Essex, cats can spread the leukaemia virus through sexual contact and saliva.[80] According to Essex's logic, if viruses could infect cats and cause opportunistic or infectious diseases that result in the collapse of the immune system, the same thing can happen with humans.[81]

The major impetus for cancer research came from former US President Richard Nixon. In the 1960s Nixon called for "the appropriation of an extra 100 million dollars to launch an intensive campaign to find a cure for cancer".[82] And in the 1970s cancer research was deemed by the National Cancer Institute (NCI) "a fruitful line of research".[83] Accordingly, in 1971 the Nixon administration passed into law the so-called Cancer Act to contribute to the war against the vicious chronic disease. Significantly, the dominant conception that most cancers are caused by viruses staged the groundwork for future AIDS research. The viral etiology of cancer mapped out the future of AIDS. *Hence, I argue as follows: Although AIDS is generally understood to be a new disease, a new syndrome, knowledge about its etiology (cause and nature) is essentially classical; knowledge about AIDS is derivative from a complex mixture of beliefs shared by the primordial founders of retrovirology in the 1960s and 1970s.* In other words, the biomedical model of AIDS is actually a reification of knowledge regarding oncogenic viruses (cancer-causing viruses).

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[79] *The England Monthly*, June 1988.
[80] Ibid.
[81] Ibid.
[82] K Studer and D Chubin 1980, *The cancer mission: social contexts of biomedical research* (Beverley Hills: Sage),75.
[83] Ibid, 75.

To begin with, growing scientific interest in AIDS in the early 1980s prompted many RNA researchers (note that retrovirologists are sometimes called RNA researchers because the main domain of their study, retroviruses, convert their RNA genome into the DNA genome) to step into the foreground – to frame the parameters of discussion about Acquired Immune Deficiency Syndrome. RNA researchers advanced the understanding that viruses are capable of not only causing cell replication/ differentiation (cancer), but also of destroying the white blood cells, the consequence of which is the impairment of the immune system. Accordingly, between April 1983 and August 1984 when three research groups in the USA, Britain and France, advanced some viruses as the cause of AIDS,[84] our virus hunters argued that these germs are very closely related to retroviruses that cause cancer. In 1986 the International Committee on the Taxonomy of Viruses proposed that these viruses should

> …be officially designated as the human immunodeficiency viruses, to be known in abbreviated form as HIV.[85]

And to develop the HIV blood test, RNA researchers used stretches of DNA from a virus associated with leukaemia, namely HTLV-1.[86] The argument was that HTLV-1 was a close enough cousin to HIV that any antibody formed to it would be the same as one formed to HIV.[87] Lanka comments:

[84] Fee, 'Sin versus science',198.
[85] H E Varmus 1989, 'Naming the AIDS virus', in E Juengst and B Koenig (eds), *The meaning of AIDS* (New York: Praeger), 9–10.
[86] G Null and J Feast 2002, *AIDS: second opinion* (New York: Seven Stories Press), 48.
[87] Ibid, 48.

> The DNA from HTLV-1 detected in this way was replicated and certain stretches of it cloned.[88]

Accordingly, by the mid-1980s popular consensus in retrovirology was that HIV is an independent variable, that the virus bequeaths the AIDS condition. The HI virus, like all retroviruses, replicates itself backwards by converting its genetic information from RNA to DNA[89]. When the DNA enters the cell's chromosome, it starts to produce new viruses or remains dormant for a number of years before it precipitates AIDS,[90] hence the long latency period from the time of infection to full-blown AIDS. This attests that HIV is essentially a slow virus; it belongs to a class of slow viruses called lentiviruses (the slow or "quiet revolution" of HIV/AIDS is discussed in more detail in Chapter 9). Just the same, although HIV is a slow virus, it has a cell-killing mechanism. It is capable of attacking the so-called T-helper cells, which protect the human body from foreign antigens/infectious agents.[91] In other words, HIV weakens one of the most important components of the human body essential for life, namely the immune system. [92]

Soon after the discovery of HIV in the mid-1980s media reports positing the connection between HIV and AIDS soared. Between 1986 and 1989 journalistic interest in the germ theory of AIDS (the biomedical underpinnings of the disease) was revealed by 49 (2,2 per cent) news reports; and between 1990 and 2000, this number increased to 524 (24 per cent) (see Chapter 3 for more discussion). AIDS was marked out as a national security problem facing the human world, particularly those in the sub-Saharan region. For example, some media reports evinced that in 2000 the number

[88] See S May Lanka 1995,'Reality or artefact', *Continuum* 3(1).
[89] H E Varmus 1989, 'Naming the AIDS virus', in *The meaning of AIDS*, 9–10.
[90] Treichler, *How to have theory in an epidemic*, 203.
[91] Ibid, 203.

of people in South Africa who would die before they reached the age of 50 would almost double.[93] This increase was attributed to the infectious HIV. The figures for 1990 and 1999/2000 were said to prove once and for all that AIDS was taking a devastating toll among South Africans, especially the most economically productive of citizens – those aged between 15 and 49 – with more men between 35 and 40 dying in the 1999–2000 period than in any other age group.[94] It was also reported that the death rate would rise to high proportions despite better access to health care.[95] Former president of the Medical Research Council (MRC), Professor William Makgoba, summed up this unremitting horror of AIDS along these lines:

> In any normal population you expect the old to die, not the young – but here you have young people dying and young women dying earlier than young men, which is unheard of in biological terms. It can only be explained by the peak incidence of AIDS, which is between the ages of 20 to 30 for women.[96]

And according to one study done by ING Barings, 12 per cent of highly skilled South African professionals, 20 per cent of skilled workers, and 27, 2 per cent of low-skilled workers would be infected by HIV by 2003.[97] In addition, it would cost an estimated R250 000 to replace each skilled labourer lost to AIDS.[98] In another study compiled by medical researchers at Chris Hani Baragwanath Hospital, Soweto, it was revealed

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[92] Ibid, 203.
[93] *Sunday Times*, 9 July 2000.
[94] Ibid.
[95] Ibid.
[96] Ibid.
[97] Ibid.
[98] Ibid.

that one in three babies born to mothers who tested positive for HIV died within 12 months, compared with one in 59 babies born to HIV-negative mothers.[99]

6.6 Representing the 'dark continent' through the prism of 'African AIDS'

Because AIDS was understood in relation to a specific combination of clinical symptoms traceable to a germ, a retrovirus, it became the possession of RNA researchers. Their ideas were internalized by students at medical schools, seeped into popular consciousness through the prism of media reports, and then sold as the 'official story' of Acquired Immune Deficiency Syndrome. Soon the official story of AIDS mutated into the status of a received narrative – the biomedical model of AIDS mutated into an established fact. What is more, RNA researchers displaced epidemiologists as authorized knowers. RNA researchers embodied authoritative voices speaking profound truths about the disease.

Because they were cast as authoritative voices, they were rendered visible by the media. Working RNA researchers embodied the prototypes of 'visible scientists' who participated in the commodification of the received narrative of AIDS. Their expert opinion by no means involved authorization from any other professional source. The virus hunter alone symbolized what Dinshaw[100] calls in another context the "originating subject". From the mid-1980s his or her mentalities, conceptualizations and hypotheses greatly shaped popular conceptions about the disease. Virus hunters carried the conviction that AIDS, like some types of cancer, is an infectious disease. That AIDS was infectious was underlined because it spreads randomly between the sexes; it rises exponentially in susceptible hosts (especially in Africa); it coincides

[99] Ibid.
[100] C Dinshaw 1998, *Chaucer and the text: two views of the author* (New York: Garland), 9.

with a common, active and abundant (or veremic) microbe; it renders human cells dysfunctional; and it generates a predictable pattern of clinical symptoms.[101]

This depiction as a contagious disease soon raised questions of its origins. As the reader knows, the first cases of AIDS were discovered in 1981 in Los Angeles, USA. However, infectious diseases were rare in the industrialized world. Jenner and his associates had vanquished infectious diseases in the 19th century. Against this backdrop, virus hunters were prompted to look for exogenous explanations for the origins of AIDS. What is more important, Africa became the focal point of their research. And out of this research was born the narrative of 'African AIDS'. To understand the origins of this African hypothesis of AIDS, we need to investigate how African pastness was represented in the Western imagination, how the African continent was caricatured in some of the written sources established in the past.

To start, through the eyes of many observers in the West, Africa represents a 'dark continent'. Here 'dark continent' connotes a status of inferiority. It suggests a state of backwardness, underdevelopment, dullness, or lack of progress. According to this dominant iconography, images of Africa are mainly those of a land of "evolutionary regression or stagnation".[102] It also denotes subservience, mediocrity, and insubordination. Pieterse states that the dominant Western iconography of Africa can be traced back to the 17th century, when the basic description of Africa was that of "negative comparison".[103] This "negative comparison" included:

[101] *Pharmac & Ther*, 55(1992):201–277.
[102] J Pieterse 1992, *White on black: images of Africa and blacks in western popular culture* (London: Yale University Press), 94.
[103] Ibid, 94.

> … no laws, no kings or magistrates, government, no commonwealth, rule, commanders, no arts (or occupation); no traffic (or shipping, navigation); husbandry (or agriculture, tillage, tilth, vineyards, sowing or planting); no money (or no exchange, gold, riches); no weapons (no knives, pikes etc.); no clothes (naked); no marrying (no wedding, no respect of kindred.[104]

In the 19th century, the representation of Africa as a 'dark continent' was determined by absences: "the absence, or scarcity, of clothing, possessions, attributes of civilization".[105] For many observers, "what Africa did have in abundance was nature".[106] Africans, like supra-primates, were said to be closer to nature! These negative representations of the continent also embodied the perfect explanation of and justification for European colonialism, which, according to Pieterse, was a kind of "evolutionary assistance from the more advanced countries to the less developed".[107] I hope that by now the reader can clearly see the conceptual congruence between some of the features underlying sociobiology (according to sociobiologists there is a relationship between genetic components and social behaviour) and modernization theory discussed previously. The term "less developed" not only embodied countries that have missed the demographic transition, but also countries that have no "attributes of civilization, no history and no kings etc".[108] "Less developed" was the perfect metaphor for the 'dark continent'. The concept of less developed conjured up images of people who have been completely conquered/vanquished. These processes (the denial of African history, the marginalization of African peoples in discourse and imagery) all formed

[104] Ibid, 101.
[105] Ibid, 100.
[106] Ibid, 89.
[107] Ibid, 97.
[108] Ibid, 104.

part of "a rhetoric that was to culminate in colonialism".[109] Africa, so the argument ran, was colonized to combat certain 'dark forces'.

In my rendering, current stereotypical stories or images of Africans build out of this iconography. Whereas in the past homosexuals were typecast and manoeuvred into the role of promiscuous or unrestrained sexual beings, now it was Africans who were typecast in stereotypical terms. From Pieterse's perspective, the idea that Africans were more lascivious than Europeans reached its apogee in the 19th century. Africa represented not only a dark labyrinth, but also "a seductive and destructive woman".[110] Significantly, the African hypothesis of AIDS, the story of a virile and bestial black man, justified the depiction of AIDS as essentially an 'African disease'. AIDS in Africa was explained by the specific patterns of sexual behaviour among African heterosexuals. This point of view was, of course, partly reinforced by the disproportionately high incidence and prevalence of HIV infections in Africa. By virtue of their colonial and apartheid past, Africans tend to experience lower socio-economic status, which, according to Duh, "leads to lower health status".[111] And according to some observers polygamous marriages and opportunistic infections are the most relevant factors in African AIDS.[112] "STDs in Africa are so widespread that there is indirect evidence that polygamous behaviour is also widespread."[113]

That AIDS is essentially an African disease was also underscored by the reading that even in Western societies, where there had been many great advances against infectious diseases, the majority of blacks were reportedly at risk of contamination. For example, in the USA, black infants are more likely to die of disease at infancy

[109] Ibid, 104.
[110] Ibid, 104.
[111] S Duh 1991, *Blacks and AIDS*: causes and origins, (California: Sage).
[112] Rushing, *The AIDS epidemic,* 60.

than any other ethnic group.[114] Table 1.3 below illustrates this discrepancy in levels of infant mortality among black and white populations in the USA.

Table 1.3 Age-adjusted mortality rates among black and white Americans

Cause of death	Black male	White male	Relative risk	Black female	White female	Relative risk
All causes	1,112,8	745,3	1,5	631,1	411,1	1,5
Heart disease	327,3	277,5	1,2	201,1	134,6	1,5
Cancer	229,9	160,5	1,4	129,7	107,7	1,2
Accident	82,0	62,3	1,3	25,1	21,4	1,2
Stroke	77,5	41,9	1,9	61,7	35,2	1,8
Cirrhosis	30,6	15,7	2,0	14,4	7,0	2,1
Diabetes	17,7	9,5	1,9	22,1	8,7	2,5
Infant mortality	2,586,7	1,230,3	2,1	2,123,7	962,5	2,2

Source: US Department of Health and Human Services 1980

In addition, comparative studies on the distribution and prevalence of AIDS in the USA and Africa reveal that the HIV retrovirus is more endemic among blacks.[115] In the USA, high rates exist for blacks for both males and females, for all age groups, and in all risk categories, excluding haemophiliacs.[116] That the prevalence of bacterial infections among blacks in Africa increased their susceptibility to HIV infection and

[113] Ibid, 60.
[114] Duh, *Blacks and AIDS*, 73–74.
[115] Ibid, 74.
[116] Rushing, *The AIDS epidemic*, 74.

the development of AIDS[117] justified seeing the continent as a cataclysm in progress, a continent with six million to eight million HIV positives, where whole villages are disappearing "while burdened economies are strained to the breaking point by massive death".[118] This depiction not only reinforced the stereotype of Africa as a 'dark continent', it also rendered the stereotype of 'African AIDS' believable. The notion of African AIDS conveyed two sets of implications: first, that AIDS among blacks is rising in a *compounded* fashion; second, that Africa is a continent that has missed the Industrial Revolution and the demographic transition. From the mid-1980s the media became the important vehicle for the commodification of this narrative of African AIDS; the media became very instrumental in selling a form of literary representation that manoeuvred the narrative of African AIDS into the foreground landscape.

The African hypothesis of AIDS manifested itself in two ways. First, some researchers believed that there was an 'isolated tribe' in Africa harbouring the infectious agent HIV.[119] When this failed to bear any fruit, it was excised in favour of the view that African monkeys are harbouring the virus.[120] Thus, a possible relationship between HIV and a monkey virus, simian immunodeficiency virus (SIV), was suggested; some argued that animal retroviruses can cause disease in animals and that these diseases overlap with a motley of diseases caused by AIDS.[121] An editorial in the leading journal *Science* spoke directly to this point: "If SIV infection is all that is needed to cause simian AIDS, that's one more indication that HIV is all that is needed to cause

[117] Ibid, 74.
[118] Ibid, 60.
[119] R Harrison-Chirimuta 1987, *Western medicine as contested knowledge* (Manchester: Manchester University Press).
[120] Ibid.
[121] W Blattner, 1990, *Human retrovirology: HTLV* (New York: Raven Press).

human AIDS."[122] Explaining how the virus, SIV, crossed the species barrier to cause AIDS in humans, one researcher stated:

> Monkeys are often hunted for food in Africa. It may be that a hunting accident of some sort, or an accident in preparation for cooking, brought people in contact with infected blood. Once caught, monkeys are often kept in huts for some time before they are eaten. Dead monkeys are sometimes used as toys by African children.[123]

Thus, one of the consequences of the discovery of human immunodeficiency virus in the mid-1980s was the labelling of Africans as a 'risk group' – a risk group defined according to ethnicity, patterns of sexual/social behaviour, and geographical origin. By my account, the African hypothesis of AIDS greatly appealed to a number of researchers because it coincided with the prevailing attitudes and beliefs held at the time. The stereotype of African AIDS should remind the reader of some of the common assumptions underlying the theory of social evolution discussed earlier, namely modernization theory. The conceptual congruence between modernization theory and the caricature of African AIDS is very much in evidence in this written record:

> The scale of the African AIDS epidemic has led to speculation that heterosexual transmission is more efficient in Africa than elsewhere ... social and cultural factors such as the African tradition of male sexual freedom, may also play a part.[124]

[122] S Palca 1990, 'The case of the Florida dentist', *Science* 255:392–394.
[123] J Green and D Miller 1986, *AIDS: the story of a disease* (London: Grafton), 66.

A leading scientific journal supports this stance (note that AIDS in Africa is also traceable to social deviance):

> We conclude that relative to Caucasians, populations of Asian ancestry are inclined to a greater frequency of inhibitory disorders ... including AIDS, while populations of African ancestry are inclined to a greater frequency of uninhibited disorders such as rape and unintended pregnancy and to more sexually transmitted diseases including AIDS.[125]

6.7 Conclusion: AIDS and our collective experience

One of the most important lessons we can derive from the history of AIDS is that, contrary to popular belief, science, like the media, is by no means immune to value judgements and subjective preferences. Undoubtedly, science is greatly shaped by the social organism of the society within which it is deeply embedded. Science does not always function independently of its social context. This underlines the following reading by Gabbay:

> ... medicine is inherently social. Far from subjective cultural elements being mere vestigial contaminants, they are the very stuff of which medical knowledge is composed. When we analyse the physicians' concepts of say, diseases, we find in spite of the scientific gloss, that their moral values, social attitudes or political prejudices are deeply embedded in their knowledge – shaping, structuring and indeed constituting it. Furthermore, since these cultural attitudes are part and parcel of the society that physicians live in, it would follow that such concepts of disease must in

[124] See Harrison-Chirimuuta, *Western medicine as contested knowledge*; also see P Nunn and K P McAdam 1988, *AIDS in Africa, Medicine International* 23:57–60.

> some sense actually embody aspects of social organisation ... however objective medical accounts of the disease might appear, they inevitably enshrine the author's subjective cultural views, which are in turn part of the society they live in.[126]

From the very beginning, AIDS became a major object of news, the greatest story ever in medical or scientific history. Not only because of its macabre character, or its sensationalistic elements of sex, love, beauty, infidelity, etc. AIDS captured popular imaginations because it fitted into the frame of our collective experience. As we have shown, the AIDS disease was not only understood in many written records according to the traditional patterns of biomedicine. AIDS was also set within the framework of the common beliefs and cultural assumptions that make up our collective experience. As will be seen, our written sources (chiefly media reports) followed the dominant themes and hypotheses offered by this collective experience and also reinforced their connection with them. Media discourses around AIDS tended to revolve around the prevailing dominant conceptions that were produced over time and space. The next Chapter probes the critical linkage between AIDS and the common assumptions held about the narrative of African AIDS, which was materialized through journalistic practices. This Chapter covers the period from the mid-1980s to the late 1980s.

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[125] See J Rushton and A F Bogaert 1989, 'Population differences in susceptibility to AIDS: an evolutionary analysis', *Scientific Medicine* 28:1211–1220.

[126] J Gabbay 1982, 'Asthma attacked? Tactics for the reconstruction of a disease concept', in P Wright and P Treichler (eds), *The problem of medical knowledge: examining the social construction of medicine* (Edinburgh: Edinburgh University Press), 23.