Marxism and the AIDS dissidents: Part 3—Drug therapies, statistical studies and the pharmaceutical corporations

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Below we print the concluding part of an extensive reply by Chris Talbot to a number of letters written supporting the theories of AIDS "dissidents". The first two parts of Chris Talbot's reply, along with the original letters, were published on Tuesday, January 30 and Wednesday, February 1.

The approach of the dissidents also falls down in relation to pharmaceutical drugs, and the diagnostic testing for HIV/AIDS symptoms. Indeed the dissidents' approach to medical issues, if they consider them at all, is as simplistic as their attitude to political and social matters.

The theme to which the AIDS dissidents keep returning is that powerful pharmaceutical conglomerates have pushed a toxic drug onto the market without adequate testing. They describe a conspiracy involving almost the entire medical profession, governments and the drug companies, in which the medication prescribed to relieve AIDS sufferers' symptoms is actually causing AIDS-related deaths.

Why do they claim, for example, that the drug AZT, the first medication to be used extensively by AIDS patients, is not only worthless but also is so toxic that it is causing more deaths? Let us first examine the science.

AZT is what is known as a DNA chain terminator. It targets the DNA of a cell and prevents it reproducing, crucial in trying to check the replication of the AIDS-infected cells. From this theoretical biochemical understanding, Duesberg has concluded that AZT will attack all the cells of the body. This is also the argument that TS repeats in relation to the use of AZT to stop HIV transmission from mothers to babies.

However, it is not only dissident AIDS scientists who have considered this danger. Montagnier, for example, has asked the same question: "Doesn't AZT kill off all cells?" His answer: "Actually, it does, but only in doses much larger than those needed to work actively against the virus enzyme".[37] The theory behind AZT, he explains, is that it will target the reverse transcriptase enzyme that HIV uses to multiply itself. Montagnier goes on to say that because it attacks DNA, AZT does indeed produce serious side effects, but that using a low enough dose can lessen such side effects. Even with the more effective "combination therapies" employing several drugs, which were developed later, Montagnier cites the severe problems the treatment produces—anaemia, effects on peripheral nerves causing pain and paralysis, nausea, diarrhoea, and digestive or skin intolerance. Long-term effects can include the build up of cholesterol causing heart disease.[38]

In other words, we see that orthodox AIDS scientists share Duesberg's concerns regarding the toxicity of AIDS drugs, within certain limits. At high enough doses AZT does kill off all cells and even at lower doses produces serious side effects. But we then have to make the transition from biochemistry to medical practice.

Scientific developments over the last few decades have made thousands of drug treatments available, and medical practice has had to develop accordingly. Taken in the wrong doses, many of these drugs are "toxic" and many also have serious side effects. But if carefully managed, treatments are now available which can at least extend the life of patients for whom there would have previously been no hope. The constant references to the "toxic" nature of AIDS drugs by the dissidents is used to dismiss possible treatments rather than address the real difficulties that a doctor and patient face in deciding on a particular therapy. Would the dissidents employ the same argument they use against AIDS drugs to reject drugs used in cancer treatment, or other illnesses where the medication is also "toxic" and can have drastic side effects? The dissidents do not consider these broader aspects of drug treatment.

In medicine many decisions about what course of treatment should be adopted are based on a doctor's experience, weighing the advantages and disadvantages of various strategies, their knowledge of the patient's history, and so on. Hopefully they are also based on informed discussion with the patient, so as to learn as much about the illness as is practical. Theoretical considerations from biochemistry can be a guide, but the present level of understanding of the subject, even though it has gone through a revolutionary development in the last period, has serious shortcomings when applied to the complexities of the human body. It has been suggested, "only about 15 percent of medical interventions are supported by solid scientific evidence."[39]

Before taking this discussion of medical practice further, we must confront the essential issue that faces millions of people in the Western world and many more in the underdeveloped countries: restrictions on access to drug treatments. Pharmaceutical drugs and the health services that employ these treatments should be available to all who need them. Instead their availability is increasingly restricted to a wealthy elite. In the West, drugs are rationed, while they are priced entirely beyond the means of most underdeveloped countries. Collapsing health services, shortages of doctors and trained staff, lack of the latest technical equipment—this is the reality that must be addressed. At the centre of this acute situation, which in Africa has reached catastrophic proportions with millions of young people needlessly dying, are the transnational drug companies, which make huge profits, and governments whose health spending is dictated by global finance.

It is something of a diversion to focus all attention on an alleged conspiracy to "manufacture" a disease and then to manufacture a toxic drug that causes it. The real conspiracy is of a wealthy minority who put their profits before the needs of the vast majority of the world's population for pharmaceutical drugs and adequate medical services.

Insofar as dissident writers consider the profits made from drugs, we find an extremely one-sided response. Joan Shenton, for example—like MS who sees "Money-lots of it" at the centre of a conspiracy—says that "science can be bought, and the individual voice is able to be silenced and dismissed because of the enormous sums of money involved in protecting

a prevailing hypothesis".[40] But when she looks at the expensive combination drugs now in use for AIDS patients, there is not a murmur about profits. Instead she accepts the conception that there is a limited amount of money to be spent on health care, which has to be rationed. The right of drug companies to make extortionate profits and the assumption that governments must roll back health care spending go unchallenged.

As well as their insistence on reducing all medical considerations to biochemistry, the one area of modern medicine which dissident writers do consider is medical statistics—the use of clinical trials, epidemiological studies, and so on. Here again we are in a field where there are also no black and white results, and endless disputes are possible. As one book on the subject puts it:

"In health care there are few situations where there is not another factor that could be considered, another study that could be done, or a variation of the hypothesis that could be suggested.... The conclusion as to whether a particular association reflects causation is not a simple yes or no, but requires reasoned and probabilistic judgements."[41]

Duesberg for example, when he and Ellison first put forward their "risk behaviour" theory of the cause of AIDS in the 1990 *Policy Review*, was confronted with the epidemiological results of the San Francisco Men's Health Study. Out of 386 homosexual men who were HIV positive when they had entered the study six years earlier, 140 had developed AIDS and most of them had died. Forty men had become infected since entering the study and two of these went on to develop AIDS. Of the 370 homosexual men in the study who were HIV negative, none had developed AIDS.[42]

Duesberg and Ellison responded by saying that although there was a correlation between AIDS and HIV infection that did not disprove that risk behaviour was the underlying cause. When a further analysis of the San Francisco study was published in 1993, showing no significant correlation between drug taking and AIDS, Duesberg's response was that the data on drug-use was superficial and inadequate, since participants had not been asked about their drug use in the years before the study and no drug tests had been carried out.[43]. AIDS dissidents continue to demand further statistical studies with participants' drug taking habits being questioned more closely. Given that such drug use is illegal, respondents may be lying, of course. But we can see clearly that "reasoned and probabilistic judgements" are not the hallmark of Duesberg's approach to statistical studies.

Similar problems of interpretation arise in the evaluation of clinical trials to test the efficacy of pharmaceutical drugs. Here there are even more complexities because, (a) patients dying with AIDS are understandably desperate to try new drug therapies they hope will prolong their lives, and (b) there is a tendency, also understandable, to exaggerate the initial success of a drug treatment and conversely a tendency to reject drug therapy when disappointment sets in after only limited success.

Along with these problems is the pernicious role of the drug corporations. Naturally their perspective is to push forward deregulation, and they employ huge public relations and advertising departments to persuade physicians and patients to use their products. Moreover, they fund treatment groups to maximise support for their drug therapies; they dominate most research into biochemistry and medicine, they increasingly finance university research, and they even fund academic journals through their advertising.

How should we react to this situation? Again the dissidents' response is far too simplistic. Joan Shenton goes into some detail on the trials in which AZT, the first anti-HIV drug, was introduced in 1986. Drugs are supposed to be subject to several stages of testing, stringent procedures that were developed particularly after the thalidomide case in the 1960s, when children were born deformed after their mothers had taken the drug during pregnancy. When new drugs are tested on a group of patients, standard statistical methods are employed, including the use of double blind tests in which neither the patients nor the doctors know which drugs are genuine and which are placebos. Shenton reveals how the AZT trials, which were funded by the manufacturer Burroughs Wellcome, were pushed through in a highly unsatisfactory, if not fraudulent, manner that was then covered up by the US Food and Drug Administration (FDA). Patients involved in the trial were concerned they might be getting placebos so sent their drugs off for independent analysis. Such was the desperation of dying AIDS victims to try out the new medicine that groups of patients on the trial shared their drugs so that they all would get at least a proportion of AZT.

What Shenton does not explain, but is detailed at length by Steven Epstein (see [23] in part 2), is the role of the gay activist movement in demanding that AZT was made rapidly available. AIDS activists claimed that they were suffering "genocide by neglect" and demanded "drugs into bodies", holding demonstrations at the FDA headquarters and intervening in meetings of AIDS scientists.

While the desperation of the AIDS sufferers was understandable, they found unlikely allies in putting pressure on the FDA to circumvent the trials. The right-wing think tank the Heritage Foundation and the *Wall Street Journal* saw AIDS as an opportunity to roll back federal regulation. When the chairperson of the House health subcommittee opposed deregulation, the *Wall Street Journal* said: "If he opposes the administration initiative, it will be interesting to hear him explain it to AIDS victims in his West Hollywood constituency."[44] Powerful financial and political interests in the Reagan administration were brought into play. The share price of Burroughs Wellcome rose at the prospect that one of its products might be the first successful anti-HIV drug. Epstein explains that it was not long before the drug companies began funding activist groups—seriously compromising their claim to represent the interests of AIDS sufferers.

As a result of deregulation in the US the pharmaceutical corporations no longer have to carry out extensive clinical trials for AIDS drugs, so that as the new combination drugs have been developed they are tested out by hospital teams immediately. "As physicians venture into ever wider frontiers of HIV treatment, the grand experiment with combination therapies ... is rushing forward without any data. No one is keeping track."[45] There is some data, but it is not from clinical trials and so lacks the scientific standards normally required. Deregulation by governments retreating before the demands of the drug corporations, and AIDS activists demanding the latest drugs on offer without extensive clinical trials, have created a serious situation that could lead to a crisis in Western countries, with the number of AIDS deaths rising again. This comes on top of the already dire situation that exists in Africa and the underdeveloped world.

The dissidents' response was to deny that the combination treatments were having any effect. In reality they have had a remarkable effect but, as we shall see, this is precisely the problem.

Even though long-term statistical studies are lacking, consider the number of deaths from AIDS in the US. In 1993 there were 44,730 deaths from AIDS, increasing to 49,095 in 1994 and peaking at 49,456 in 1995. Then they dropped sharply to 36,510 in 1996, falling to 20,732 and 16,317 in the next two years (see the table from the US Centers for Disease Control).[46] TS argues that this sharp fall in AIDS mortality follows the fall in new AIDS cases, repeating dissident material put forward to deny the effect of the drugs. Based on research done by San Francisco Health Department director Dr. Mitch Katz, dissidents claimed that if the changes in the definition of AIDS by the medical authorities are taken into account, the fall in AIDS deaths could be explained entirely by this earlier peak in the rate of HIV transmission. In fact Katz's predicted lower rate of new AIDS cases was still far higher than that actually observed from 1997 onwards.[47] This fall in AIDS deaths relates to the US only. In Europe, where treatment is free, the drop was even steeper, falling by 80 percent between 1994 and 1998.[48]

Because no longer-term studies were available, the initial apparent success of the drugs caused euphoria amongst many AIDS patients and scientists. Naturally the drug companies have been able to boost their profits by selling various combination therapies at hugely inflated prices. The effect has been to foster a dangerous complacency. As Laurie Garrett points out, there have been three studies conducted, which were published last year, showing that drug-resistant strains of the HIV virus have been spreading in the United States and Europe.[49] It seems likely that the drugs presently used to treat AIDS will only buy some time, perhaps several years, before the virus reasserts itself. Most scientists in the field explain that this is because the HIV virus rapidly mutates and so even after changing the combination of drugs that are used, eventually they are unable to halt the spread of the disease.

In the US, the media hype that proclaimed the disease had been "conquered" led to "acute AIDS care facilities [being] shut down, breaking up teams of scientists, physicians, and nurses that used to monitor patient outcomes on a scale that offered statistically relevant information."[50] It now seems that HIV infection is increasing amongst gay men, as there is an increasing trend to have unprotected sex in the belief that the infection is no longer dangerous.

It seems likely that the concentration on promoting drugs that had not undergone extensive testing has resulted in a complacency, which has seriously damaged long-term research. Certainly there has been little effort put into the development of a vaccine for AIDS. Garrett explains the position in relation to vaccines: "In 2000 none of these solutions were at hand. And, more importantly, none were in the R and D pipelines of major pharmaceutical companies, primarily because of a lack of perceived future profitability."[51]

Whilst the drugs have bought some time for many AIDS patients, it should be stressed again that it is only for those who can afford the cost of treatment ($10,000 a year upwards). The cost not only involves the combination drugs, but also the medical care and supervision needed in taking such a medical cocktail that often has serious side effects. Lack of access to treatment increasingly applies in the US as well as the underdeveloped countries. Surveys in America show that more than half the people infected with HIV cannot afford the combination drug treatments. One survey concluded that fewer than one third of those infected have the kind of private insurance that allows access to the full combination therapy treatment.[52]

A study of dissident writings on the newer "triple combination drugs" shows a similar response to that of Joan Shenton. The right of drug companies to charge extortionate prices and make huge profits goes unchallenged. There is no concern over deteriorating medical services or treatment costs. The improvements that the drugs can bring, if only for a period, are denied. John Lauritsen writes for example: "Patients taking protease inhibitors did so as part of a herd decision, in the context of hope generated by pharmaceutical propaganda. They expected to get better. They encouraged each other to get better, and some of them did. The others were ignored, a form of ostracism. In other words, benefits from the protease 'cocktails'—if any—must be psychological. There is no way that these chemicals could have real health benefits." Thus the dissidents claim that the perception of improvement produced by the drug is some kind of mass hypnosis. This sort of argument will do little to help their case since most people concerned about the AIDS issue can check from a variety of sources, including those critical of the medical establishment such as Garrett,[53] that the drugs have indeed produced dramatic improvements in the short term.

HIV testing

One of the most emotive issues in the dissidents' arguments is that of HIV diagnosis. There are clearly many personal tragedies involved and the dissident literature has brought this out. At the very least, being tested HIV positive can often result in being socially stigmatised, and there are a number of cases of suicides following such a diagnosis. It can also result in job loss and huge medical bills. Because the test was less reliable in the early years, there are instances of people being diagnosed HIV positive who should not have been.[54] Several leading dissidents, like Christine Maggiore, tested HIV positive and have survived and are enjoying good health. But again, it seems that serious issues relating to medical practice and diagnosis are being confounded with a scientific dispute in biochemistry.

Joan Shenton organised a small sample of people to be given HIV tests. Not surprisingly she found that people who were not AIDS sufferers but had autoimmune conditions, such as rheumatoid arthritis, could receive positive results. As I tried to explain in my reply to Mr. Martinot's letter (see: "An exchange of letters on AIDS/HIV" http://www.wsws.org/articles/2000/aug2000/aids-a26.shtml), the tests are supposed to be used as part of a medical diagnosis, taking into account the fact that it is well known that many "classic" diseases can also give positive results.

Shenton found that five HIV positive patients tested HIV positive in all the tests, but one gay man tested positive in three but negative in two. Shenton suggests that the negative results may have been because the test laboratories did not know the subject was gay. She certainly revealed that there could be problems with the tests in some borderline cases. The high figures for their reliability, which I cited in my reply to Mr. Martinot, are taken from World Health Organisation (WHO) statistics and probably provide a more unambiguous result, because they are tested on more clear-cut cases. Joan Shenton says that the medical profession should have carried out large-scale statistical trials to check the reliability of the tests. However, given that there are many cases going through the courts for incorrect diagnosis—cases which the dissidents hope will vindicate their claims—it would seem unlikely that the medical profession were avoiding subjecting the tests to further scrutiny. Much more likely is the recognition—which holds throughout medical practice—that even the best diagnostic procedures can fail and have to be used in conjunction with a range of other tests and observations.

(It should be noted that these AIDS tests do not depend on the PCR technique referred to by TS, although PCR and other techniques are used for monitoring the progression of the disease. The reliability of such techniques is explained by Bruce Mirken in *Answering the AIDS Denialists*.)[55]

TS's approach—that AIDS symptoms cannot be distinguished from cancer and tuberculosis because they give the same HIV positive result, and that HIV tests are not accurate and lack any standard—seems to be demanding that the complex business of medical diagnosis can provide a simple Yes/No result on the basis of one test. Whatever the problems—and there certainly are serious issues, such as the variation of standards between one country and another—they would seem to have no direct connection with the truth or falsity of the HIV-AIDS theory.

Historically the reliability of HIV tests does not seem to have been an issue with the dissidents in the US. It is hardly dealt with in Epstein's book, which appeared in 1996. The Perth group of dissidents in Australia, led by biophysicist Eleni Eleopulos, began raising it in 1993. In extremely technical papers, they queried the whole basis for HIV testing, questioning whether the HIV virus had in fact been isolated. One would have to be a specialist in the field to follow all their arguments, but their main point seems to be that the proteins specific to HIV exist in everyone and so the basis for the tests is flawed. The German virologist Stefan Lanka took their position further at the conference organised by AIDS dissidents in Buenos Aires in 1995. (Their recent intervention in South Africa is not the first time the dissidents have taken their views to an underdeveloped country, although they seem to have met with less success in Argentina.)

Lanka put forward theoretical arguments attempting to show that HIV does not exist and has never been isolated. His philosophy seems to be

one of extreme hostility to modern medicine and medical intervention; “we have first to regain and then retain autonomy over our bodies and health from self-appointed experts, who have dispossessed us of it.”[56]

The position that HIV does not exist is also defended by MS. She agrees with Ellison that Duesberg has “sold out” and is unable to break from his background of research into retroviruses. Duesberg, however, thinks that HIV does exist and can be isolated but that it does not cause AIDS. At the Buenos Aires conference there was a clear disagreement between Duesberg's approach and that of the Perth group. Duesberg commented:

“It seems tragic that over 99 percent of AIDS researchers study a virus that does not cause AIDS and that the few who don't are now engaged in a debate over the existence of a virus that does not cause AIDS.”[57]

Apparently the dispute in the dissidents' camp is unresolved to this day. Although the Perth group contribute to Duesberg's web site, Duesberg also puts forward a claim on the site to have personally isolated HIV. It certainly illustrates the enormous technical complexity and propensity for disputes in this branch of science and hardly inspires confidence in the dissidents' case.

Some conclusions

As far as the purely scientific issues are concerned, reading a good many articles and books on this subject with as open a mind as possible has failed to change the view that I expressed in my reply to Mr. Martinot—that the theory HIV causes AIDS has been essentially proven. However, I confess that not being trained in biochemistry, I have found many of the papers too technical and time-consuming to follow in detail. I accept that there are many areas where the chemistry of how the HIV virus operates is not understood and that debate on the scientific questions should continue. There is certainly evidence that questions are not being addressed and that proper scientific debate is not taking place.

The most convincing proof of the HIV-AIDS theory is the impact of the combination drugs. Here I think that the attempt of the dissidents to deny the drugs' effectiveness flies in the face of the evidence, which cannot all be ascribed to the public relations propaganda of the pharmaceutical corporations.

In answer to TS's question, as to which paper convinced me of the hypothesis that HIV causes AIDS, I would say that Montagnier's recent book *Virus* seems to be the best account for the non-specialist (see [13] in part 2). Perhaps because Montagnier has worked for years in an environment that has not been entirely dominated by corporate greed and control of research funding, his semi-biographical book is well worth reading. In presenting the main outlines of the orthodox theory, he is refreshingly free of the arrogance and simplistic dogmatism that seems to permeate the subject.

Montagnier admits that “cofactors” besides the HIV virus could be the cause of AIDS, a position he has held since the early 1980s. Duesberg, however, dismisses his approach:

“Once you have an establishment that has made a mistake, but got into a position of power for it, they will hardly resign because it's very comfortable to be there on top.... And the classic escape in science is to say it [HIV] is not sufficient to cause the disease, which is what they've been saying from the beginning. They now say we need something else ... it gives them plenty of time to adjust their hypothesis. But by doing this you question your primary claim directly, because if you don't know what else causes it you can't know whether HIV plays a role in it.”[58]

Apart from the fact that Montagnier has held his “classic escape” conception from the start, Duesberg's claim that until all causal factors are known it is not possible to put forward a causal explanation seems to be an extremely narrow conception. It would rule out most developments in any branch of science and certainly in medicine, where the damage or overloading of the immune system by serious infections, drug-taking and so on must be studied as possible factors in how a disease takes hold, as must genetic variations between individuals.

It must be said, however, that highly technical scientific questions are not the main issue at stake. The point I have been attempting to make throughout this reply, particularly by looking at the history of the AIDS catastrophe, is that there are key political and social issues which should be debated but which are being obscured by the dissidents. It is true that the majority of “orthodox” scientists are also reluctant to raise such questions—this is often not only due to the source of their funding, but also to the current intellectual climate, which has kept political debate at the lowest level.

Whilst the dissidents hardly consider political questions overtly, much of what they have done over the last decade or so *is* political. However unwittingly, they have aided or potentially could aid quite reactionary forces, from the ANC regime in South Africa to the religious right in the United States.

There is, however, every indication that from the disgraceful episode surrounding Gallo's first claims to have found HIV, to the scientific conferences in 1996 when the new combination drugs were proclaimed as the ultimate solution, the pharmaceutical corporations and their allies in government have largely dictated the scientific agenda on AIDS science. Whilst I would not go so far as the dissidents in suggesting they have been able to get everyone to accept a completely false theory, it is certainly true that they have steered research in a definite direction. No doubt they do this through their control of research grants, through financial rewards and the promotion of key individuals, etc. Although I do not accept the conception put forward by Mr. Martinot that dissident scientists are “oppressed”, I can understand that they have been squeezed out by the “top” circles who run conferences, edit journals and dictate the direction of research, just as Montagnier was squeezed out in 1984.

To give an example from the dissidents' material: David Rasnick, a biochemist who supports Duesberg, explains how he attended a top AIDS conference in 1997.[59] The fact that he attended and was able to give a paper attacking the standard HIV causes AIDS theory, shows that there is not the total censorship that dissidents have suggested. But when he put pointed questions to two of the leading scientists at the conference, they simply refused to answer and even ran away. Other scientists, who Rasnick says were sympathetic to the points he was raising, would not risk challenging the top men. There is a ring of truth about Rasnick's report, which points to a very unhealthy situation in science.

To get to the truth about how AIDS develops and to find a cure for a disease that is affecting millions requires the best scientific traditions. Open debate, maximum clarity, access to all information—these are basic requirements.

Doesn't this mean a political campaign is needed, which reveals much more about how the corporate agenda is encroaching on science? Dissident scientists could divert some of the energy they have been putting into the scientific dispute over the cause of AIDS into exposing what they know, or can find out, about how the pharmaceutical companies are operating. Surely it would be infinitely more productive to take on the real forces at work that control and restrict scientific debate, rather than the divisive denunciation of all virologists for failing to meet up with Duesberg's intellectual standards. But in questions of science policy, as in the issue of drug therapies, there is little indication in the dissident writings of any real opposition to the operations of the pharmaceutical corporations.

In relation to Africa and the underdeveloped countries, I have already shown that to concentrate attacks on the WHO and aid agencies is a reactionary agenda. As well as bringing out the impact of the IMF and World Bank on the health care systems of these countries, much more can be said about the operations of the drug companies in the third world.

Despite the media hype in May last year—that five top drugs companies were prepared to slash the prices of their HIV drugs for people in “third world” countries—it was almost entirely a public relations exercise. As the

recent *Washington Post* investigation reveals, the WHO and the UN were bounced into making the announcement, although as one of the UNAIDS officials admits "there was no substance".[60] Only about 25,000 Africans—about 0.001 percent of those infected—have access to antiretroviral drug treatment.

Over 40 drug companies are taking the South African government to court this year to defend their right to patent drugs under the World Trade Organisation's so-called Trade Related Aspects of Intellectual Property Rights (Trips) agreement. Three years ago the South African government proposed a clause in their Medicines Act which would authorise the manufacture of generic AIDS drugs and other medicaments in South Africa. There was never any intention by the ANC government of challenging global capital—it has signed the Trips agreement—it merely wants the right to make its own profits. But as the court case reveals, no reduction in prices or infringement of the global profits of the drug corporations can be permitted.

The pharmaceuticals have now developed a strategy to avoid the kind of problems that arose over the clinical trials of AZT. By employing doctors and academics in Eastern Europe and underdeveloped countries to organise their drug trials, they can avoid all the problems when using placebos that arise in the West. Regulations are often virtually non-existent, so drugs regarded as too risky for testing in the US and Europe can easily be tried out. Poorly educated patients are usually unaware of what treatment they have signed up for, and if the drug companies then have to pay for the health care of patients in the trials, it is at the much lower costs that prevail in such countries. Some aspects of this scandalous situation are contained in the series of articles in the *Washington Post*.[61]

More generally, there are health care issues involved that are relevant not only to the vital issue of AIDS, but that also have huge implications for the whole of humanity. Here I am referring to the range of scientific and technological developments made in biochemistry as a whole.

Perhaps the most publicised aspect of this is the human genome project, when the draft genome was obtained several years sooner than had originally been anticipated. But there are many other aspects to this science. By employing gigantic computer power, researchers are not only building up their knowledge of the DNA molecules in the human cell containing the genetic code (genomics) but also knowledge of the other chemical components of the cell, messenger RNA (transcriptomics) and proteins (proteomics).[62] No doubt there is a good deal of media hype about how soon this research will translate into medical solutions for cancer and other diseases. It may be decades rather than years. It is an irony of the present period that the CEO of a pharmaceutical company would share Duesberg's dismissal of the "germ theory" of medicine. These companies are now preoccupied with techniques of developing drugs based on genomic and proteomic principles. Billions of dollars are being pumped into this science by the drug corporations, with a view to the huge profits they may reap in the future.

On the promise of the results they hope to obtain from this research—using the analogy of the research and development of microchip technology in earlier decades—drug corporations are now billed as the success story of global capitalism. This is not to ignore, of course, the profits they are currently making from vastly over-priced drugs.

Laurie Garrett gives some figures that demonstrate this. In 1998 the pharmaceutical industry made a profit of $99.5 billion in the United States alone. Profits rose by 11 percent from 1997 to 1998 and by 16.6 percent from 1998 to 1999. Between 1993 and 1998 the amount spent on pharmaceuticals in the US doubled, rising $50.6 billion to $93.4 billion. Profit growth in the pharmaceutical industry far outstripped that in other sectors. Pharmaceutical profits grew by 14 to18 percent annually between 1997 and 2000, while those of Fortune 500 companies averaged 4 to 7 percent growth. Garrett comments, "The result was fantastic price upgrowth for medicines, making pharmaceutics the new engine of health care inflation at the dawn of the 21st century. Just a decade previously it had been hospitals that drove inflation: by 1999 the real question facing policy makers was no longer whether insurance companies, governments, and individuals could afford the costs of hospitalizations, but whether they would be able to afford to buy the drugs intended to prevent these hospitalizations."[63]

The science of AIDS and the development of AIDS drugs surely have to be discussed in this context. Shouldn't the tremendous potential for humanity contained in the science of genomics and proteomics be under the democratic control of the mass of working people, rather than the Dow Jones index and corporate boardrooms?

Instead of allowing the present direction to continue, where access to the full range of drugs and medical care is increasingly available only to a wealthy minority, isn't it necessary to put a stop to this profit gouging and place all medicine and healthcare under public ownership? The same issue comes up with government spending (or lack of it) on public healthcare, which is determined not only by the inflated prices of drugs and medical equipment but by the demands of the financial markets. All of these wider political, social and economic questions are raised by the AIDS catastrophe.

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