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Cochrane on Communism: the influence of ideology on the search for evidence

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Introduction

In his seminal work Effectiveness and Efficiency,1 Archie Cochrane asked why, despite their enormous potential, randomized trials were much less widely used that they should be. At the time that he was writing, their geographical distribution was very uneven. He wrote ‘If some such index as the number of RCTs per 1,000 doctors per year for all the countries of the world were worked out, and a map of the world shaded according to the level of the index, one would see the UK in black, and scattered black patches in Scandinavia, the USA, and a few other countries. The rest would be nearly white. It appears in general that it is Catholicism, Communism, and underdevelopment that appear to be against RCTs. In underdeveloped countries this can be understood but what have Catholicism and Communism against RCTs?’

In this article, I will focus on Soviet communism. Cochrane had a strong commitment to social justice, commenting that ‘The difference in the medical care of the rich and the poor was sufficient to touch the hardest-hearted student in the 1930s.’ He memorably went on a demonstration in favour of the creation of a National Health Service holding a placard stating that ‘All effective treatment must be free’ but, as he recalled, ‘the only person who noticed it damned me for having Trotskyite tendencies’.

His political views were shaped by his experiences in the 1930s. Between 1931 and 1934, he had been in Berlin and Vienna, where he observed the rise of Nazism. In 1936, he enlisted with the International Brigade in the Spanish Civil War. However, there he saw another aspect of authoritarianism in the atrocities committed by the communists against followers of other parties on the Republican side, as well as the incompetence of some of the Soviet commanders whose actions led to military disasters.2 Len Crome, the senior medical officer in the Brigade, reported, in relation to the communists, that ‘Archie is hostile’ (J Tudor Hart, personal communication). Thus, it is clear that Cochrane was certainly no naive observer of communism.

The emergence of Soviet science

In 1917, the USSR inherited a thriving scientific community, with strong collaborative links abroad, especially with Germany.3 During the nineteenth century, Mendeleev had developed the periodic table. Others contributed significantly in areas such as physics, mathematics, mineralogy and agriculture. Borodin undertook groundbreaking work in organic chemistry while composing many highly acclaimed musical works. In 1904, Pavlov won the Nobel Prize for Medicine while, 4 years later, Mechnikov shared the same prize with Erlich for their work on phagocytes. Scientific societies flourished, as did specialist journals. These journals were the setting for vigorous debate, focused on the novelty and objectivity of research. Ideological intrusions were rejected or ignored.

In the years immediately after the revolution, Soviet science continued to prosper, viewed as a contributor to the creation of ‘the first socialist society’. Thus, during the 1920s, the scientific community was protected from the hardships experienced by the general population. Foreign literature was quickly translated into Russian and contacts with scientists from abroad were routine. However, the replacement of aristocratic patronage by state funding did mean that a small number of officials, and by extension senior scientists blessed with their favour, were able them to exert almost total control over their specialist fields. However, almost at once, the Bolshevik Peoples’ Commissariat for Enlightenment engaged in a twin track policy of co-opting the talents of the existing bourgeois scientists while at the same time creating a new cadre of proletarians who would develop a new Communist science4 leading to the emergence of an alternative model.5 The Communist Academy, established in 1923, conformed to the structure of the Party, with a self-appointed Presidium of high ranking officials exerting discipline over its members. Papers were discussed on the basis of their ideology rather than their validity or novelty. Its journal ‘Under the Banner of Marxism’ stated that ‘we are not investigators who observe from a distance the development of ideas, the struggle of social and class forces and the tendencies in our society. We are fighters, our journal is a journal fighting for the materialist world view’.

Over time, traditional scientists saw the benefits of close association with the Party. Increasingly, the word Marxism appeared in the titles of their papers, even if not in the texts. Scientists holding entirely contrary views used almost identical arguments to contend that their version of reality was the true Marxist one.6 Soon, one’s ability to claim Marxist credentials became the main criterion for advancement and those holding
opposing views were criticized for their anti-materialist views.\(^7\) However, the co-existence came to an abrupt end in 1928, when Stalin, concluding that the adherents to Communist science were now sufficiently numerous, called for ‘a mass attack of the revolutionary youth on science’. Scientists who refused to conform, or who were denounced as a consequence of personal rivalries, were sent to the Gulag, where many died.\(^8\) Institutions were subject to periodic reviews which invariably concluded with the words ‘The leadership of the institute has been Bolshevised’. Those expelled were replaced by younger staff promoted from the children of the proletariat.

Communist science soon became the orthodoxy, a development encouraged by the growing isolation of the Soviet Union. Access to international scientific literature was no longer possible for all but a very few and even domestic publications were censored. Permission was needed at the highest level simply to hold a scientific conference. Well into the 1990s, much Russian academic literature showed little awareness of research published in international journals.\(^9\)

A key aspect of the new science was that all scientists were expected to show how their interpretations were consistent with the founding fathers of their disciplines, such as Michurin in biology or Pavlov in psychology, or even better, Marx, Engels, Lenin or, ideally, Stalin. It became obligatory to use what were termed ‘nomadic quotations’, in which sayings of these great men would be used to justify whatever was being argued.\(^10\)

The results were predictable, exemplified by the ascendancy of Trofim Lysenko, a Ukrainian agriculturalist who rejected Mendelian ideas of genetics, arguing that change in plants arose from adaptation to changing circumstances within a few generations.\(^11\) His influence on Soviet agriculture was disastrous but, notwithstanding the accumulating evidence of the failure of his theories, he survived for many years because of the high-level political support he received. Yet, there were many other bizarre ideas, such as those of Lepeshinskaia, who argued for the pre-Pasteurian idea of spontaneous generation of micro-organisms from non-cellular matter.\(^12\) Examination of how these ideas developed reveals the dangers dismissing the concept of falsifiability. An example is heliobiology, in which the impact of cosmic radiation has been linked to conditions as diverse as myocardial infarction and stroke\(^13\) and breast cancer,\(^14\) as well as impacting on development in utero.\(^15\) This theory could, of course, be tested by seeing whether the same relationships could be demonstrated in different populations. In fact, there was no association between sunspots and cardiovascular disease in the USA,\(^16\) but the enthusiasts remain unmoved, arguing that this simply showed that disease processes differ in different places.\(^17\)

These were hardly fertile grounds for the implementation of randomized controlled trials, whose basis is that there is a genuine state of uncertainty and the result cannot be predicted. This was totally contrary to the model of Soviet science. Quantum physics suffered for the same reason.\(^18\)

**The benefits of ignorance**

The developments catalogued above are, of course, well known by scholars of Soviet science. However, I contend that, at least in the last two decades of the Soviet Union, there was another reason for rejecting the concept of evidence. Here it is necessary to consider the achievements of the Soviet health system. The Bolsheviks inherited a state in which health care was at best rudimentary for all but a small urban elite. A very basic rural health system, based on district physicians, had been put in place in 1864 with the liberation of the serfs and shortly afterwards was complemented by a requirement for factory owners to provide basic care in urban areas. The system was, however, very weak and the Bolsheviks placed a high priority on creating a universal health system, with Lenin famously remarking that ‘If communism does not destroy the louse then the louse will destroy communism’.\(^19\)

The scale of the challenge should not be underestimated. Many regions of the USSR were sparsely populated and conditions were often extremely primitive. Yet, by marshalling the total commitment that was only possible in a totalitarian state, a basic, but effective health care system was put in place. There were not enough doctors so a new group of workers, the feldshers, were created. These were individuals with basic medical training and feldsher-midwife posts were widely distributed. However, even for most physicians, training was very basic. Consequently, the entire system was operated on the basis of rigid central plans, with treatment regimes and the corresponding resources set out in a series of decrees, or prikazes, developed by a small elite in Moscow, many of whom had little if any idea of the reality faced by those who must implement their ideas.

At first the system was extremely effective, especially when compared with what had gone before. Vaccine-preventable diseases declined rapidly, as did maternal and infant mortality. Life expectancy rose markedly. The Soviet Union was seen by many in the west as providing a vision of what could be done, a vision especially prevalent among left-wing American commentators who contrasted the implementation of universal coverage based on primary care with the fragmented and inefficient system in their own country.\(^20\) This explains why much of the literature on comparative health systems from this time had, as an undertone, the comparison between these two systems, with little doubt about which was better.\(^21\) The Soviet Union actively exploited this situation, and we now know that the Alma Ata conference, advocating primary health care, was, behind the scenes, an ideological battleground between East and West, in which the Soviet Union was seeking to highlight its achievements in the creation of a nation-wide health system, while the USA wanted to retain the focus of the WHO’s activities on infectious diseases, in particular malaria eradication.\(^22\)

However, time moves on. The Soviet system worked well in the 1950s because the few interventions available to it were easily delivered by those with few skills and little infrastructure. The 1960s and 1970s were different as many new classes of drugs became available enabling effective treatment of many chronic disorders such as hypertension or asthma. Very soon, death rates from non-communicable diseases began to fall in the west. Yet, Soviet science lacked the engineering expertise to build the necessary production facilities or the biochemical and physiological expertise needed for drug discovery. Worse, what expertise that existed was committed to the military-industrial system. Even if it could have overcome these obstacles, the
Soviet distribution system, which was unable to bring ordinary consumer goods to its citizens, could never have managed the continuous supply of drugs to people with complex diseases. Nor would its health workforce have had the expertise to use them effectively, given the need to tailor regimes to patients’ individual circumstances.23 As a consequence, most drugs that were available to people in the main cities were imported from abroad, typically from the eastern European satellite states or from the Indian sub-continent. The former were less of a problem as they were obtained using the COMECON barter system, which created conditions that were highly favourable to the Soviet Union. However, the latter required scarce hard currency. Unsurprisingly, the falls in avoidable mortality seen in the west did not occur in the Soviet Union24 and, by the 1970s, alarm bells rang when it became clear that the steady decline in infant mortality had reversed.25

Yet, the system had to be seen to be doing something. In the absence of modern drugs it introduced a bewildering array of physical therapies involving almost every type of electromagnetic radiation imaginable. These approaches were capable of convincing many patients that something useful was being done. Common treatments included electrostatic therapy, in which an electrically charged glass cup is passed over the diseased parts of the patient’s body, giving the individual a series of small electric shocks, or light therapy, in which patients are bathed in ultraviolet light. Recently, a major hospital in the Russian city of Samara has invested in a gravitational therapy unit, in which patients are rotated at high speed in a machine similar to that used in training astronauts (Y Balabanova, personal communication).

What, one might ask, would happen if these treatments were subjected to rigorous evaluation? While one cannot know until they are tested in this way, even a basic knowledge of physics and biology would suggest that many are, at best, improbable. Yet, if these interventions were shown to be ineffective, what would have been left? The situation is now different in that modern pharmaceuticals are available but subject to large mark-ups, of up to 200%, as they move through the distribution chain, so that even in 2000, 22% of Russians were unable to afford prescribed drugs.26 Yet, in the economic conditions that now prevail in Russia, the use of a complicated machine can generate a good living in a system where informal payments to physicians are widespread.27

In summary, therefore, there were two reasons why randomized controlled trials did not thrive under communism. One was the politicization of Soviet science, in which scientific uncertainty was not accepted and where methodological limitations were overlooked as long as research complied with the prevailing communist ideology. But the second was that it served the needs of the system to prevent established treatments being questioned. If they were, and were found wanting, what would be left?

In some cases this might not matter. The placebo effect is important and it could be argued that many treatments in use in the ex-USSR fulfil the role of much alternative medicine in the west. Unfortunately, the opening of borders is now placing in the hands of ex-Soviet physicians a wide range of treatments that can have undesirable effects.

An example can be seen in Armenia. Shortly after gaining independence, Armenian physicians acquired large numbers of ultrasound machines, often benefiting from assistance from the extensive Armenian Diaspora. This was associated with a rapid rise in the male:female sex ratio to a level that now exceeds that in China (Figure 1).28

There are, however, many other examples. A recent study of obstetric care in a region near Moscow found that many of the obstetric interventions were ineffective, such as physical therapies based on light, electricity or magnetism, administered at some stage during pregnancy. Other treatments were unnecessarily unpleasant, such as the near universal practice of administering intra-muscular injections of vitamins.29 Yet, others were potentially harmful, such as the administration of diethylstilbestrol, even though it has been known since the 1960s that it causes vaginal cancer in those exposed in utero. Many of the drugs used, including a diverse range of infusions administered almost universally to pregnant women, have never been subject to rigorous evaluation.

The western response

Much of what has been written about Soviet medicine is characterized by a generosity of spirit,30 with a willingness to concede that some of the unconventional treatments observed may work, perhaps drawing on some knowledge that is not available in the west. This is understandable. As a guest, one does not want to criticize one’s hosts and, given the strong belief that people have in seemingly bizarre treatments, observers may be tempted to think that there is something in them. A recent example was the approving description by a British doctor of the benefits of sitting in a salt cave bathed in soothing coloured lights.31 That treatment was administered to disadvantaged Russian children with the aim of reducing their risk of catching colds.

In the past, however, political considerations played a role. As noted previously, many positive accounts of the Soviet health system were by American commentators advocating universal health care coverage at home. Some honestly held to a belief in the triumph of the socialist state, which they saw as embodied by the Soviet Union, while others were reacting against the prevailing hostility against the Soviet Union, seen at its most

Figure 1  Male:female birth ratio in Armenia

<table>
<thead>
<tr>
<th>Year</th>
<th>m:f Ratio</th>
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<tbody>
<tr>
<td>1985</td>
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</tr>
<tr>
<td>1987</td>
<td>1.05</td>
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<td>1.1</td>
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<td>2001</td>
<td>1.4</td>
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<tr>
<td>2003</td>
<td>1.45</td>
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Source: WHO health for all database
extreme in the rise of McCarthyism. Paradoxically, the British communist party included a number of pioneers of evidence-based medicine, such as Richard Doll and Philip D’Arcy Hart, who presumably were influenced more by their commitment to social justice than by considerations of the nature of science. However, in the aftermath of the Second World War there was also a reluctance to criticise the country that had sacrificed so much in the common struggle against Nazism. In 1946, the British biologist Cyril Darlington wrote a critique of Lysenko’s work and of the persecutions of his opponents, arguing that in the Soviet Union ‘we see indeed the official overthrow of truth and reason…no less official than that in Hitler’s Germany’. His paper was rejected by Nature, whose editor described it as ‘undesirable’ and then by Fortnightly Review, whose editor was ‘fearful of being thought a stumbling block to better relations between the countries’. The article only appeared when George Orwell became aware of it and arranged for its publication. Effectively, the Soviet rejection of methodological criticism had been exported.

Wider implications

The USSR ceased to exist in 1991 but, as this essay has shown, its influence on clinical practice lives on. There is clearly much to do to disseminate principles of evidence-based health care in Russia and many of its neighbours. Yet, ideological interference with science was not unique to the USSR. There were many examples in western Europe during the Renaissance, exemplified by Galileo’s recantation of his discoveries in the face of the inquisition. The distortion of evidence in the dossier on weapons of mass destruction used to justify the invasion of Iraq is only one example of the misuse of information for political reasons by the current British government. It is, however, in the USA where, perhaps, the greatest contemporary assault on scientific integrity can be seen. This has been described in detail in a report by Congressman Henry Waxman that draws examples from over twenty scientific areas. Many of these examples relate to health, such as sex education, climate change and pharmaceutical policy, but they also include defence, such as national missile defence, and the environment, such as the protection of fragile ecosystems.

The topics related to health and environment fall into two categories; those such as abortion, stem-cell research or abstinence that have active religious right wing constituencies that support President Bush and thus fit with a neo-conservative ideology, or issues such as global warming or environmental protection that have significant economic consequences for his corporate supporters, and thus fit with a neo-liberal agenda. The report identifies three broad strategies that have been employed: manipulation of scientific committees; distortion and suppression of scientific information and interference with externally funded scientific research. As in the Soviet Union, there are two, often interlinked, reasons for this phenomenon. Its most commonly stated justification is ideological, in that it reflects the views of many American citizens, especially those on the religious right. However, it may be that the second, more pragmatic reason is the most important, that it provides support for the powerful vested interests of the ruling elite.

While powerful interests, most notably tobacco and oil companies, have long sought to distort scientific evidence, their efforts have often been countered by Federal agencies that upheld scientific integrity. Now members of previous administrations, of both political parties, argue that the current scale of distortion is unprecedented, as is its degree of official endorsement. For example, writing about global; warming, the head of the Environmental Protection Agency (EPA) under President Nixon wrote that ‘I can state categorically that there never was such White House intrusion into the business of the EPA during my tenure.’ The Waxman report concludes that ‘These actions go well beyond the traditional influence that Presidents are permitted to wield at federal agencies and compromise the integrity of scientific policymaking.’

Conclusion

At the time that he was writing Effectiveness and Efficiency, it was entirely reasonable for Archie Cochrane to focus on Communism. The adverse consequences of the ideological domination of Soviet science had often been overlooked, perhaps, because attention was been distracted by its few successes, such as Sputnik. Yet, those consequences are still being experienced every day by thousands of former Soviet citizens who are being subjected to treatments that are at best useless and at worst harmful. Science is inevitably shaped by the ideology within which it takes place, for example, in the way that research agendas are developed, with some things studied and others not. The problem arises when ideologies seek to impose their vision of the world by the distortion of science. The most powerful of these ideologies at present is the blend of neo-liberal and neo-conservative ideology emanating from the USA. Given its status as the world’s one remaining superpower, this ideology increasingly is affecting everyone. If there ever was a time to recall Santayana’s warning that those who ignore history are doomed to repeat it, surely it is now.

Acknowledgement

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