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## Panel Discussion: Covid-19, Technology and Ethics

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**Abstract:** The Covid-19 pandemic has led to considerable disruption and raised a number of issues for both individuals and society as a whole. Many of these issues have both technology and ethics dimensions. Several of them are discussed in this paper. In the session the authors will be making brief presentations from their perspectives and the experiences of Covid-19 in their different countries. This will be followed by a comment/question and answer session and final summing up by the authors.

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### 1. INTRODUCTION

The Covid-19 pandemic has put great stress on both societies and individuals. Responses have been affected by a number of different factors. At the individual level they have generally been inspiring and shown the strength of the human spirit and the willingness of people to put themselves out and even to take major risks in support of others. This is illustrated by the various support groups and initiatives that have sprung up and even more so by the dedication and hard work of everyone working in the health service.

Societal responses have been affected by a variety of factors including income. They have also shown up the values or lack of them of many governments and the relative importance given to human health compared to other issues. Responses have also raised the issue of the use of technology to reduce individual freedom, apparently in the interests of society as a whole.

This session will discuss the full spectrum of issues related to technology, Covid-19 and ethics and the lessons that can be drawn from the Covid-19 experience. Brief presentations of their perspectives by each of the authors will be followed by audience comments and questions to the panel. Finally each of the authors will be given the opportunity to make a few final comments. As well as their different individual perspectives, the authors bring their different experiences of Covid-19 and measures to manage and contain it in Scotland, Kosovo, Ireland and Germany.

### 2. VACCINATION

There are a variety of ethical issues associated with the way vaccination is being carried out. Analogously to the digital divide, there is a vaccine divide based on income. In the richer countries Covid-19 vaccination is generally available, and strenuous efforts are being made to vaccinate the whole

(adult) population. In the poorer countries availability is limited and presumably the rich and powerful have preferential access. Thus Covid-19 and access to vaccination follows and highlights many of the other global inequalities.

For instance, in Kosovo vaccination started much later than in, for instance, Western Europe and the USA, and to date only 58,486 people have been vaccinated using vaccines donated by different countries (Ministry of Health, 2021). In view of this, plans to vaccinate up to half a million people a month seem unlikely to be realised.

One of the barriers to more equal access to vaccination is cost and the patenting of the technologies. A number of petitions are circulating for patents to be waived to make vaccines more easily accessible in the poorer countries. So far they have not had an impact. The richer countries could probably do a lot more to ensure wider access to vaccines, including through development aid. They could also finally write off the various loans made to the middle and lower income countries. It should also be recognised that the balance of payments is in the other direction with \$16.3 trillion being drained from the global south between 1980 and 2012 (Hickel, undated). Corruption of different types may also act as a barrier.

Pfizer recently made a cynical announcement that it was not aiming at a vaccine to eradicate Covid-19. Instead it was planning for an endemic so that further vaccination was required each year and it could continue to make enormous profits. This raises issues of whether and, if so, what type of additional regulation of the large pharmaceutical companies is required. For instance, should they or at least some aspects of their operations be brought into public ownership and control?

This also raises technical issues of what is feasible through Covid-19 vaccination. The technology is still to a large

extent experimental. It has been brought into use much earlier than is probably desirable and before experience of its use over an extended period due to the urgency of the situation. This means that there is, at best, very limited information about potential long-term risks of vaccine use. Unfortunately, however much we might deplore it, we should recognise that the main aim of the large pharmacology companies is making a profit rather than serving society. However, there are questions as to what is feasible.

Without exonerating Pfizer, producing a vaccine with a long-term impact is almost certainly a considerably more difficult technical problem than a vaccine which is effective for a year or so. This may also be related to the fact that flu vaccines typically last for a year, though it has proven possible to produce effective long-term inoculation against conditions such as measles and mumps. A further issue is the feasibility of vaccinating a large part of the population every year, in view of the time and resources required. This is likely to further exacerbate health inequalities.

### 3. CIVIL LIBERTIES AND HUMAN RIGHTS

The fight against Covid-19 has led to a number of restrictions of individual civil liberties. For instance, in most countries the response has involved enforced lockdowns and restrictions on activities rather than voluntary agreements and precautions. This raises the issue of the extent to which restricting individual liberties is justified as part of the collective fight against a global pandemic.

A recent negative Covid-19 test is already being used as a prerequisite for air travel in many cases. Some people have access to tests through their workplace or educational institution, but this is not generally the case. The costs of testing may be prohibitive for many people. There are also differences in test availability between countries. This therefore introduces both restrictions on civil liberties and potential discrimination.

There have also been suggestions of the introduction of vaccination and testing passports. For instance, Israel has been using ‘green passes’ to allow admission to hotels, gyms, restaurants, theatres, and music venues, and New York using ‘Excelsior passes’ to give access to theatres, arenas, event venues, and large weddings (Hall and Studdert, 2021). There is also a thriving forgery industry, for instance in Israel. There have been suggestions that UK National Health Service (NHS) staff should be required to be vaccinated to retain their jobs. Currently vaccination take-up is relatively low, particularly amongst some ethnic groups. Enforcing vaccination would therefore entail some discrimination. Sacking NHS staff who refuse a vaccination would lead to the already understaffed NHS suffering further. A more appropriate solution would be to find out the reasons for the low take-up and to use other protective measures and possibly also reassign some staff to areas of the NHS with lower Covid-19 transmission risk.

The use of Covid-19 track and trace apps has had relatively low take-up in Europe. The measures taken to protect individual privacy vary and are better in some versions than

others. However, most of them raise some risks of unauthorised access to personal data. There may also be concern about the ‘authorised’ access to personal data inherent in the system.

The intention is early identification of Covid-19 contacts to prevent unnecessary spread of infection or providing an electronic record of vaccination or Covid-19 tests. However, they provide considerable potential for abuse by authoritarian regimes. Under the guise of protecting public health they could be used to undermine civil liberties and curtail the movements of opponents or critics and possibly even to ‘disappear’ them.

### 4. COVID-19 AND THE ECONOMY

In many countries Covid-19 has had a negative impact on the economy. Industries, such as catering, hospitality and leisure facilities, which require face to face contact have been particularly badly hit. Some governments have provided furlough payments for workers unable to work at home. However, these payments have not always been made for as long as necessary and financial and other support has not necessarily been provided to the relevant firms and industries to prevent closure.

Suggestions have been made in the UK of using Covid-19 passports to allow people who have been vaccinated access to events and premises that would otherwise not yet be open as a way of supporting firms and industries under pressure. The associated civil liberties issues are less strong than in the more widespread use of Covid-19 passports, though an ardent football fan who is still waiting to be vaccinated might not agree. There is still the potential for forgery and the fact that vaccination has not yet been shown to prevent transmission of the Covid-19 virus. There has also been extensive criticism from the hospitality industry with proposals for Covid-19 status checks for customers entering pubs, bars and restaurants considered ‘undemocratic’ and ‘potentially incredibly discriminatory’, particularly towards younger people who have not yet had the opportunity to be vaccinated, and against the ‘ethos’ of pubs being ‘open to all’ (Partridge, 2021). There are also individuals who have received medical advice against vaccination or who have other good reasons for not being vaccinated. Individuals with medical advice against could probably receive an exemption, but this may be more difficult for people with other good reasons.

As always the economic impacts have been most devastating in the poorer countries. For instance, in Kosovo there has been a combination of reductions in state revenue from taxation, rising unemployment and high health care costs. This is likely to have a very negative impact on infrastructure, health and education for many years to come. A survey of firms in Kosovo found that 39% had closed, 30.7% were working at reduced capacity and 13.8% part time (AMC, 2020).

However, there have also been exceptions to this. For instance, manufacturing in Ireland has largely not been affected by the global pandemic and there was a rise in output

in the last quarter of 2020 (Gleeson, 2021). Collaborative robots have been used in several instances in factories in Ireland to aid social distancing between operators. They have also been used in the manufacture of Covid-19 personal protective equipment and disinfection (Anon, 2020). There may be a relationship between the use of robots and the growth in manufacturing output. There is clearly a role for the use of robots in work which is potentially dangerous or otherwise unsuitable for human operators. It can be said that boosting the economy through the use of robots in ways that do not support employment could lead to job losses and overall be disadvantageous. However, collaborative robots have the potential to be used side by side with humans in a symbiotic manner, and so this relatively new technology can, in the future, support factory worker rather than replace them. (Doyle-Kent, M., Kopacek, P., 2020)

### 5. COVID-19-19, CLIMATE CHANGE AND MILITARISM

Climate change and nuclear weapons are two of the main threats facing the planet. The reduction in industrial activity and air travel as a result of lockdown associated with Covid-19 have slowed down the increase in carbon dioxide and associated temperature rises. However, this raises issues of what will happen as lockdown restrictions ease further. There could be a massive boost in leisure air travel with many people desperate to get away after lockdown restrictions.

There will clearly be a need to restart industrial and other activity. This restart provides an opportunity to do this in a way that minimises carbon dioxide emissions and other negative environmental impacts. However, despite many organisations and governments having net zero policies it remains to be seen to what extent they will take them into account or whether they will be motivated by a desire to rebuild the economy as fast as possible without consideration of environmental and other costs. The work of the UK Green Jobs Alliance should be noted here. There is considerable potential for economic redevelopment and new jobs that make positive contributions to moves to a zero carbon economy while improving quality of life and eradicating inequality.

There is considerable evidence that it is resolving the underlying causes of conflicts such as poverty, resource shortages and climate change that improves international security (Abbott et al., 2006). However, instead of trying to resolve these problems countries have focused on acquiring large arsenals of high tech weapons. Unfortunately the arms trade takes advantage of conflicts to test and sell a wide range of weapons.

Pre-Covid-19 there was some recognition of the potential impact of pandemics as a security threat, including by the UK government's security advisors. However, there was minimal, if any, preparation to meet the threat posed by a pandemic. For instance, at the start of the Covid-19 pandemic the UK had a severe shortage of ventilators.

This can be contrasted with the UK government's attitude to nuclear weapons. The nuclear armed (and powered) Trident submarine is being replaced at the end of its life and the number of warheads is being increased by 40%. This is counter to the Nuclear Non-Proliferation Treaty which the UK has signed and which requires nuclear armed states to engage in nuclear disarmament. It is also counter to the Treaty on the Prohibition of Nuclear Weapons which came into force in January 2021 and which the UK has not signed. This contrast in preparation rather starkly highlights the ethical issues raised by choices about technology use.

### 6. THE FUTURE: MOVING EDUCATION AND OTHER ACTIVITIES ONLINE

As a result of Covid-19 many activities moved online using Zoom, Teams and other video conferencing tools. Some activities have already moved off-line to a face-to-face context, but the extent to which this is happening varies between countries, sectors of the economy and types of activities. This raises questions of the extent to which it is desirable to continue activities online when this is no longer necessary. In terms of reducing energy use to combat climate change this will clearly be beneficial. However, interactions online and face-to-face are frequently of a different type. Many people miss face-to-face interaction and it allows a type of making contacts and networking which is much less feasible online.

Areas in which this is being debated include education. Many education workers have serious concerns about the risks of a too-early return to face-to-face teaching. In a number of institutions blended learning involving different mixtures of online and face-to-face interaction is being proposed. The use of technology to support education and blended learning are by no means new. However, Covid-19 has made this more urgent and also popularised video conferencing tools which were previously only used on a limited scale.

Education should not be seen as a one size fits all approach. In general what works best depends on the particular teacher(s), group(s) of students and the material being taught. Some very good virtual labs have been developed. However, at some point students require hands-on experience. Some teachers are better able to adopt their materials to the challenges of online teaching. Whatever mixture of approaches is used, the importance of peer support in learning needs to be recognised. Many students miss interaction with other students, both social and academic, in online teaching. Therefore, online or blended learning needs to develop ways of providing this interaction and peer support.

It should also be recognised that bringing groups of people together in face-to-face contexts for extended periods increases the risks, both of them getting Covid-19 and it being spread more widely. This gives rise to a need for great caution in moving back to face-to-face education.

### 7. THE ROLE OF SCIENTISTS AND ENGINEERS

There have been very significant advances in the civil liberties of the individual and the rights of minority groups, though prejudice and discrimination have not yet been eliminated. Different societies have different balances of rights and responsibilities between the individual and the collective. Some of the previous discussion, for instance of track and trace apps and Covid-19 passports, has highlighted the tension between the freedom of the individual and the rights of society as a whole. There are tendencies in components of western society to overstress individual freedom as the ability to do whatever the individual wants devoid of responsibility to society as a whole. This is clearly a recipe for disaster. On the other hand, consideration of only the needs of the wider society and ignoring the rights of individuals, including to dissent, can lead to oppression.

Both engineers and scientists have a vital role in technological and the associated social change – engineers in developing the technology and scientists in advancing the fundamental knowledge that makes this possible. Both TECIS and its predecessor SWIIS have promoted discussion of the ethics of engineering actions and activities within the IFAC Committee on Social Impacts of Automation and more generally within IFAC. This has drawn attention to the fact that engineering ethics is much wider than day to day professional and ethical practice, important though this is. It also covers the vitally important issue of the wider social, environmental and other impacts of engineering activities and consequent choices about which projects and other activities should and should not be engaged in.

The discussion of engineering ethics in SWIIS in the 1990s had an impact on the Association of Engineers in Germany (VDI). For instance, this influence has affected the text of the VDI Preamble of the Fundamentals of Engineering TEthics (2001):

Engineers recognize natural sciences and engineering as important powers shaping society and human life today and tomorrow: Therefore, engineers are aware of their specific responsibility. They orient their professional actions toward fundamentals and criteria of ethics and implement them into practice.

This approach originally focused on the need to reinforce the individual responsibility of the engineer by an ethical commitment similar to the Hippocratic Oath in medicine. However, the different cultural and value systems in different countries make this difficult and possibly undesirable.

Ethical engineering has a very important individual dimension. This requires individual engineers to consider the consequences of proposed actions in advance and endeavour to behave to the highest ethical standards at all times, including rectifying any mistakes they make. However, there is also a collective dimension (Hersh, 2002). The engineering community has a responsibility to develop an ethical ethos and encourage and support ethical behaviour by its members. Individual engineers also have a responsibility to the engineering collective to encourage its members to consider the consequences of their actions and to adopt

ethical approaches. In this way ethical engineering could become the norm rather than a minority concern.

Both individual engineers and the engineering community have a responsibility to future generations to take action to ensure that technology is used to benefit humanity, the planet and other species and to prevent catastrophes caused by the inappropriate use of technology.

With these aims in mind we are calling on all scientists and engineers to engage in a period of reflection. We are asking them to consider their actions and the motivations for them and the consequences for both current society and future generations, as well as for the planet.

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