

## **Statement on Scientific Freedom and Responsibility Considering Context**

**by Jay Aronson<sup>1</sup>**

The Statement on Scientific Freedom and Responsibility is aspirational and intentionally broad in scope. The statement recognizes that the conduct of a scientist will depend upon political and economic context, and the institutional context (or the lack of) in which the scientist operates. As noted by numerous people consulted during the drafting of the statement, very few scientists carry out their work in complete freedom, or will be able to fulfill all of the responsibilities laid out in this statement.

There are many instances in which the ideals of scientific freedom and responsibility will fall short, for example when scientists are engaged in work with national security dimensions in which releasing conclusions or data could prove detrimental to society; when the products of scientific labor are restricted by business interests or intellectual property protection; when necessary data cannot be collected for any number of reasons; when certain topics are considered off-limits to researchers; when scientists work under regimes that limit the transmission of knowledge either through direct control or more subtle coercion; or when the institutions that scientists work in do not provide adequate protection for them to practice science in an open, safe fashion.

Even though it may not be possible for scientists to uphold all of the values laid out in this statement, they still must not use their knowledge, expertise, or creations to violate human rights or human dignity, cause unnecessary pain or suffering to non-human organisms, or disproportionate damage the environment whenever it is possible to make another choice. Scientists should interpret restrictions, rules, and directives that impinge on human rights and freedom as narrowly as possible and resist them when feasible.

Scientists should consciously consider the effects of their work on society and take responsibility for both positive and negative effects. Scientists cannot always change outcomes or influence the integration or implementation of science and technology in society, but they are obligated to do their best to minimize the harm caused by their work and to give society the information it needs to understand and debate the potential merits and harms of a technology or body of knowledge, when possible. It is not always obvious when an action will cause harm—and many harms are unintended—but scientists have an obligation to acknowledge harms when they occur and mitigate them whenever possible.

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The statement is not intended to be a checklist or recipe for being a socially responsible scientist—the daily work of scientists operating in a variety of contexts is too varied and complex to offer a single code of conduct or ethical protocol. Further, it is not always obvious what the correct action is in a given situation. Sometimes it might be to go along with an order or directive; sometimes it might be to refuse to act. Responsibility also depends upon one's role in an organization—those with higher rank or more power may have greater freedom to push back against their superiors. Ultimately, the statement is meant to help scientists work through thorny ethical and political problems and consider deliberately the ways in which they and their work are embedded within a broader social context.

It also provides guidance for decision makers and the public to use to ensure that scientists have the capacity to follow their curiosity, provide intellectual and material benefit to humanity, engage in a productive dialogue with society, and are not asked to engage in research or action that violates human rights or core scientific principles.

The statement can also be used as a means to evaluate action. Outcomes will depend on the complexities and contingencies in any given situation. When decisions are made, scientists can ask themselves whether they have done as much as possible to fulfill the responsibilities laid out in the statement. Likewise, non-scientists can ask if their society has done all that it can to support and encourage free inquiry in a manner that improves the human condition—physically, intellectually, spiritually, and otherwise.

The tenured academic scientists operating in liberal democracies and individuals who pursue science as a hobby have the greatest freedom and arguably the greatest responsibility to uphold the values in the statement. Scientists operating in less free, more precarious, or more repressive situations still have an obligation to uphold as many of the values as possible, but may not always be held to the same standards. Yet even scientists working in the best of situations are under increasing pressure in the 21st-century to pump out publications, obtain funding that is ever harder to garner, gain publicity for their findings, and produce economically exploitable knowledge. They are less free to follow their own curiosity or to do work that, while vital to the advance of human knowledge, is not as amenable to conversion into funding or public acclaim. It is imperative that universities and other institutions continue to advocate for the freedom and responsibility of science both within and outside their own walls.

Scientists should be mindful of the values of human rights within their professional and academic communities. Within their own communities, they have both a right to—and an obligation to ensure—a tolerant, respectful working environment in which they and their ideas are valued and given a fair chance to succeed. As much as possible, scientists should work to ensure that their laboratories and workspaces are not home to discrimination or inequity. This norm applies whether or not scientists are in repressive regimes. Junior researchers and members of traditionally underrepresented groups should receive credit for their efforts, have opportunities to advance their careers free from discrimination, and be free to express concerns or disagreement without fear of reprisal.

Within the broader community, scientists have an obligation to inform the public about their work as much as is possible and to encourage open debate about the social, political, and ethical impacts of science on society. They should also act in the best interests of humanity, which requires investigating and understanding the sensitivities and concerns of the people and communities affected by their work, including research subjects when applicable.

Scientists should seek input and feedback from nonscientists (e.g., citizens, clergy, ethicists, or lawyers) and consult with social scientists with relevant knowledge about complex ethical or political challenges they face. This consultation is necessary particularly when there are issues at the frontiers of science that have not yet been subjected to scrutiny outside the scientific community, when new scientific knowledge or products are being introduced into a community or society for the first time, or when older patterns of action no longer seem appropriate or effective.

Scientists, politicians, policy analysts, and the public should work together, both domestically and internationally, to ensure that science can be practiced according to the values laid out in this statement. When ideal conditions are not met, scientists may still find themselves in a position to engage with their employer or government about the benefits of openness, both in terms of scientific practice and the free exchange of scientific information around the world.

Scientists have often been in the vanguard of movements for greater democracy, tolerance, and freedom, suggesting that these values can be found at the core of the scientific endeavor. Scientists have also developed technologies and bodies of knowledge that have saved countless lives and made humanity more comfortable and prosperous. They also produce and possess knowledge on some of the gravest challenges our world faces today.

At the same time, the products of scientific studies have caused harm to societies and communities many times in the past. Sometimes these harms are deliberate. Sometimes they arise through lack of cultural understanding, situational awareness, incomplete planning for contingencies and unexpected events, and unequal distribution of access to science and knowledge. In other cases, they can be a byproduct of a technology or body of knowledge that is seen to provide benefit to society, or at least certain members of it. We hope that this statement can help encourage social good and mitigate the social harm, but we recognize that there is no simple method for maximizing benefits and minimizing harms. The key, we believe, is that scientists have an obligation to explicitly address these issues head on.

Given the challenges faced by scientists even in the most tolerant societies today, powerful scientific organizations like AAAS also have an obligation to work to protect scientists who carry out their responsibilities in the face of political pressure or even personal harm. It is imperative that universities and other institutions continue to advocate for the freedom of scientists and their research and the responsibility of scientists.

We hope that this statement prompts conversations about scientific freedom and responsibility at all levels of science education, in society, at corporations where science and engineering research takes place, and among policy makers. Scientists have a right to engage in inquiry free from oppression, undue pressure, or threats to their well-being or those of their loved ones. At the same time, scientists have a responsibility to operate from a position of humility and respect for the world and humanity. Scientific knowledge generates great power (even when it seems as if science is under threat), and this power must be wielded with great care.