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The Societal Impact of Security Research

The expression 'societal impact' refers in a general way to change brought about in society by a given action or activity. All research has a *societal impact* of one form or another. All research is carried out in society and its results are introduced into society.

In this policy brief we ask:

- What is the role of research in society?
- What is the impact of security research on society?
- By what criteria can we assess this impact?
- What can we do to assure that the impact is favourable?

J. Peter Burgess *Peace Research Institute Oslo*

Peace Research Institute Oslo (PRIO)
PO Box 9229 Grønland, NO-0134 Oslo, Norway
Visiting Address: Hausmanns gate 7

Centre for the Study of Civil War (CSCW)
PO Box 9229 Grønland, NO-0134 Oslo, Norway
Visiting Address: Hausmanns gate 7

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The Societal Value of Basic and Applied Research

The idea of the societal impact of research grows out of a distinction – one that is commonly made by researchers, research administrators, funding agencies and philosophers of science alike – between *basic* research and *applied* research.

Basic research is research that justifies itself – and the costs it instils upon whatever actor or agency happens to be funding it – by appealing to a principle that asserts the value of knowledge for its own sake. The *value* of the knowledge generated through basic research is implicit. It is derived from the simple principle that the production of knowledge is a good in itself; that scientific enquiry, to the extent it advances the frontiers of what human beings know, and contributes to further developing the means, methods and techniques of scientific inquiry has value for society. Relevant criteria for the assessment of *basic* research are related to the means, methods and techniques used in the research. The knowledge produced itself is neither an object of evaluation nor a means of accountability. The meaningfulness or truth of the research is independent of the practical application of its results.

Arguments for the pursuit of *basic* knowledge accordingly rest upon the assertion that knowledge and the pursuit of knowledge through research are self-legitimating. It is the pursuit of knowledge itself that has value. *Curiosity*, then, is regarded as a virtue, and the drive to fulfil curiosity constitutes a value in itself. This implies that it is not the practical use of knowledge that allows for the assessment of research, but rather the *way* in which the research is carried out. In the assessment of the quality of the fundamental research, regardless of the field or subfield within which it is conducted, it is the *method* that matters, along with the *coherence* of the means and ends; it is the *techniques* applied and the *procedures* adopted that form the criteria for excellence.

Applied research, by contrast, is research that is conceived, organized, funded and executed relative to a concrete problem or perceived need. Criteria for the assessment of *applied* research are related to the knowledge it produces, to the practical value and relevance of the research. Arguments in support of *applied* research are in general of an entirely different order than those in support of *basic* research. *Applied* research derives its meaning – and thus its financial justification – from its *relevance* to society, to society's needs, to society's values, to its aims, needs or ambitions. Applied research presupposes that a distinct societal need is identified and that a programme of research is devised to provide the concrete knowledge required to meet that need.

The finality and value of applied research is assessed on the grounds of this relevance, on the degree to which the results of the research can be applied to one or several problems beyond or after the research itself. The salience and value of any type of applied research – including security research – lies outside the research itself and in its impact on society.

Two Sites of Research Impact: Methodology and Output

In general, research can have an impact on society at two different points: at the level of the scientific *methodology* it employs and at the level of the scientific *output* it generates and communicates.

The impact of research is linked to *methodology* in the sense that scientific research, both in the natural sciences and in the social and human sciences, is carried out in society. It is carried out by people, in relation to people, and for the benefit or profit of people. In the case of the social sciences, it is carried out on people. Thus, the actual execution of scientific research has clear societal consequences. The choice of research methods has distinct implications not only for those immediately involved in a given research project, but also for those in the research environment, for the scientific community, or for others who might repeat the research in different settings – either in order to verify its results or to produce additional knowledge of a related kind.

Scientific research methods also have an impact on (and are themselves also impacted by) the core *values* of society. This is the case in particular when we consider the established ethical norms and standards for scientific research. But it is also true for the more general values in play within society – that is, the regard for human beings in general, the respect for distinct groups that might be singled out through research processes, the esteem for autonomous thought, independence in the choice of questions and methods, autonomy of analysis, freedom of movement and exchange of ideas and material goods, and intellectual ownership, as well as more general considerations related to the value of individuality or personhood within a given society. Scientific methods also concern the values of privacy and the protection of the data that might be generated or derived from the research. Experimental techniques and tools also carry consequences for society in the sense that they feed into the evolution of scientific traditions and the standards and practices that characterize them. By extension, research methods can have an impact on how people are understood and treated, and on the ways in which the rights of individuals and groups are regarded and treated.

In terms of *output*, it is clear that the results of any given scientific project flow directly into social settings, thus producing consequences for society.

Most scientific research is often disseminated through publications, via the Internet, in sound or audio files, or via television, teaching or the ordinary spoken word. The societal impact these publications have can take a number of forms. More technologically oriented research is implemented or concretized in the form of actual procedures, materials, devices or tools. Other types of research outputs come into circulation in society through the development of ideas, concepts and materials.

Research results also circulate through people. Knowledge emerges in and through scientific processes that are enabled and carried out by individual scientists and scholars, groups and institutions, all of which carry and express themselves in different ways, according to different types and modes of communication; in other words, through the values, memories, customs and relations that make up society. All scientific research has a design and an execution, an interpretation and an implementation. In short, research itself – whether natural scientific or social or human scientific – is in itself societal.

In a more straightforward way, the output of research comes into contact with society at the

moment it is released from the researcher's hands. The moment the laboratory doors are opened and other people are exposed to the results of the completed research, there is an immediate impact. Depending on the kind of research output, the results will be fed to further societal processes. The research will be seen and experienced by the general public, discussed and judged in the court of public opinion. It will be taken up by product developers and, under the steering of market forces, transformed into consumer articles. It will be integrated into the development of other products as components in a larger system. Or it will be transferred to other researchers, who will use it for new research activities.

All of the above-mentioned processes of dissemination share a common feature: the future lifecycle of the research results, the perception, relevance and overall value of the research, is determined by criteria and processes of information and communication that are beyond the control and remit of the project itself.

Two Types of Societal Impact for Security Research[1]

Any action can have desirable and undesirable outcomes. Research is no exception in this regard. Simplifying, we can identify two kinds of outcome for security research in relation to the society in which it is carried out and into which its results will be disseminated: *beneficial* and *detrimental* – positive and negative.

Exactly what might be considered beneficial or detrimental for a given society, of course, is a matter for political debate. In all societies, there exists considerable disagreement regarding the nature of society, its meaning and purpose, the values it embodies, the aims it promotes, the institutions it legitimates, etc.

When it comes to the *security* of society, these debates and disagreements often become particularly acute. This is because questions of security most often engage the basic questions of what a society values, what it regards as indispensable, what can be traded or sacrificed. It involves questions of what the loss of a given form of social existence could potentially mean and, just as importantly, the awareness that members of a society have of the form of life they have.

Assuming that the aim of applied security research is to contribute to making society more secure, the *beneficial* impact of applied security research is a more secure society, that is, an *increase* in the security of society obtained as a result of the research. However, such a definition of the beneficial societal impact of security research generates a new set of controversies and questions in its turn.

First, security is distributed unequally throughout society. It is dependent upon a range of societal variables, such as economic well-being, family structures, cultural traditions and political systems, to name but a few. Just as security is distributed unequally within society, so is the security 'value added' generated by security research unequal: certain segments of society benefit more from security research than others do.

Second, a wide range of different types of benefits may be produced from security research. Not all are relevant for all members of society. Thus, for example, improved emergency equipment, better methods for treatment of the ill, enhanced tools for dealing with power shortages, better-understood social systems, etc. represent an improvement of security for some segments of some societies but are far from globally beneficial.

Third, the overall benefit of individual results of security research and investment is complex and uneven. Improved societal security for some segments of a particular society does not necessarily imply an overall improvement in the security of the society as a whole. Indeed, some benefits to certain segments of society can actually be detrimental to other segments.

Fourth, other related values – perhaps those that are less directly related to security – can be impacted both beneficially or detrimentally by security research.

Of course, the beneficial impacts of security research can take a number of forms, such as increased health and well-being, decreased violence and social conflict, reduced anxiety, enhanced economic stability, increased confidence in financial markets, increased investment, lowered perceptions of insecurity, etc.

The notion of the *detrimental societal impact* of security research refers to undesired or negative consequences of security research and development. Research is detrimental if it leads to the implementation of measures that either reduce the security of society or have no effect at all.

Undesired results of security research can include both the results of research that does not reach its intended aims or research that does reach its aims, but whose aims do not provide the security it originally set out to provide. Crucially, it can include particular measures that have as a secondary effect an increase in insecurity– such as the development of scanning devices that cause unease, weapons systems that provoke fear or insecurity among innocent bystanders, or surveillance systems that are experienced as too invasive.

An important class of detrimental impacts of security research involves research activities that generate secondary effects that are detrimental to the values, norms or laws that form the backbone of society. This type of detrimental societal impact can be roughly divided into three types.

The first of these concerns the development through research of security measures that entail the violation of fundamental rights and values enshrined in the Treaties of the European Union (e.g. freedom of association, freedom of expression, democracy, equality, rule of law, protection of personal dignity, privacy and data protection, etc.) or, more globally, human rights or international law.

The second concerns measures that impact disproportionately upon specific groups or unduly discriminates against them, including most classes of profiling or other types of identification and tracking on the basis of general group properties such as race, religion, gender, etc.

The third type concerns the development of security measures that go beyond the limitations of the fundamental rights enshrined in the European Charter of Fundamental Rights.

Critical Concerns

There is an important potential pitfall to this schema for understanding societal impact and

[1] Working Group on the Societal Impact of Security Research recently published its final report in which it presented a proposal for a *Checklist for Societal Impact of Security R&D Projects* (see box below).

its use in the validation of research and its relevance to society. By advancing the notion of 'societal impact' as a way of assessing the relevance, effectiveness and accountability of security research, we run the risk of suggesting that security is *not* by nature societal. In insisting that security research has a distinct societal impact that has been previously neglected, we must therefore avoid giving the impression that 'society' and 'security research' are somehow basically distinct or estranged from one another, and that they should be reunited. This opposition is a false one. Society and security research are not opposed. Rather, they are inseparably intertwined. It is the task of the review of the societal impact to uncover and understand this intertwinement.

Unfortunately, most often this intertwining is invisible to us. A variety of different forces – social, cultural, technological, educational and institutional – contribute to maintaining and expanding this sense of opposition into the ways in which technologically oriented researchers and social scientists experience and work in the world.

Actors in security research, from engineers and designers to legislators and decision makers, from developers and investors to social scientists and philosophers continue be educated and socialized in entirely diverse ways. They live and work in different intellectual cultures. They earn their livings and advance their careers according to different norms and logics. The values by which their work is evaluated and rewarded are different. From an *institutional* perspective, the organization of security research is distinct from that of social-scientific research. It is to a greater degree privatized and operates in relation to the machinery of a free market. It is valorised according to a discourse of innovation that only marginally relates to the work of social scientists. By the same token, technological research is financed through different models, and the norms of accountability for funding committed to technological research are of a different order. Scientific merit is assessed according to distinct tracks, with publication and peer review organized according to different models.

This immense difference in paradigms prolongs the false opposition between security research and society. Yet, as soon as we begin to look more deeply into the challenge of security, we find a complex interaction between social forces and security technologies.

On the one hand, security research is profoundly social. On the other hand, society and social relations are profoundly changed by security research and the measures taken as a consequence of such research.

Security researchers and the security professionals that implement their findings work within a field of social assumptions, structures and values. These shape and form the perceptions and understandings of the world in which there are clear threats and dangers and for which they seek to build security solutions. Yet, social structures, customs and values are profoundly changed by the advance of technological change. Societal security and insecurity rises and falls, emerges and disappears, in conjunction with technological change. Technologies bring new fears and malevolent possibilities, while at the same time providing the means and measures for overcoming old ones.

Societal Impact Checklist

Ensuring security research meets the needs of society

1. What documented societal security need(s) does the proposed research address? (E.g. life, liberty, health, employment, property, environment, values)
2. How will the research output meet these needs? How will this be demonstrated?
3. What threats to society does the research address? (E.g. crime, terrorism, pandemic, natural and man-made disasters, etc.)
4. How is the proposed research appropriate to address these threats?

Ensuring security research benefits society

5. What segment(s) of society will benefit from increased security as a result of the proposed research?
6. How will society as a whole benefit from the proposed research?
7. Are there other societal values in Europe that are enhanced by the proposed research?

Ensuring security research does not have negative impacts on society

8. If implemented, how could the research have a negative impact on the rights and values enshrined in the Treaties (e.g. freedom of association, freedom of expression, protection of personal dignity, privacy and data protection etc.)?
9. If implemented, how could the research impact disproportionately upon specific groups or unduly discriminate against them?
10. What specific measures will be taken to ensure that the research outcomes comply with the European Charter of Fundamental Rights and to mitigate against any of the negative impacts described above?

THE AUTHOR

J. Peter Burgess is a philosopher, political scientist and cultural historian. He is currently Research Professor at the Peace Research Institute Oslo (PRIO), Senior Researcher at the Centre for Law, Science, Technology and Society of the Vrije Universiteit Brussels, and Editor of Security Dialogue.

E-mail: peter@prio.no

THE PROJECT

The Societal Impact Expert Working Group was set up in 2010 as an outcome of the ESRIF final report. It gathered experts from industry, academia, and NGO communities in the aim of advancing the role of security research in society. In 2012 its Societal Impact Checklist was adopted as part of the 2013 Security Work Programme.

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