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Perspective: Science policy through public engagement

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Abstract

While tensions may lie between science and policy, we argue that dissemination and public engagement are key in alleviating those perceived tensions. Science being valued by society results in fact-based policy-making being demanded by constituents. Constituents' demands will yield representatives who are familiar with the scientific process and research to inform policy decisions.

Key words: engagement; policy; public; policymaker; constituents; outreach; science; exploration; NWA; NWO

1. Introduction

The tension between scientific research and the promotion of political action is as old as science itself. Should scientists be detached, hyper-objective recorders of 'truth', or passionate, uniquely qualified proponents of the systems they study? The former stance may limit scientists' perceived societal relevance, while the latter may compromise their perceived integrity. An attractive middle ground for practicing researchers is to strongly advocate for inclusion of the scientific process and evidence-based decision-making for the general public.

Ultimately, effective science policy is rooted in the perception of value in research. But where is this value really being recognized? The challenge is communicating research effectively and not just in one single front. As George Bernard Shaw wrote, 'The single biggest problem in communication is the illusion that it has occurred.' and that is where a great pitfall lays, failing over the idea that if one group is listening the others are too. Learning and research institutions, societies and even individuals as producers of the message and holders of objective scientific data, must hold public dissemination and outreach as core aspects of their activities.

A succinct history of risk communication illustrates how the public mindset has changed toward increasing political involvement during

the last fifty years (Morgan et al. 2002). In the 1950s, the American public felt that a decision was acceptable if they had been informed about it; by the 1970s, consultation was desired; since the 1980s, participation in the decision-making process has been expected. The evolution of this process—away from rule-by-decree and toward public participation in consensus building—suggests an avenue by which science policy can create a supportive constituency (Creighton 2005).

The Netherlands has taken the trend of increasing public involvement in science policy to its apex. Starting in 2015, to further the national research agenda, the general public was asked to submit research questions they wanted to be addressed. This bottom-up approach of appealing to the public rather than a specific group led to the collection of 11,700 questions. These questions covered the entire spectrum of scientific research, from detailed to big-picture and from fundamental to applied. Individual questions were then grouped into 140 clusters, which today comprise the Dutch National Research Agenda.¹ These clusters are wide-ranging and reveal a voracious and diverse public interest. They include the environment and economy, individuals and society, health, technology, and fundamental existence. Several national coalitions have formed around these clusters and are currently exploring research trajectories to accommodate each cluster. While it might be argued that such methodology is more likely to produce applied rather than

theoretical research, it revealed the applications sought demand basic and theoretical research prior to their development.

Many efforts in citizen science utilize this desire for public involvement with use of crowd-sourced computation power for research and simulations. Such crowd-sourced, bottom-up approaches provide an avenue where public involvement has the potential to influence policy.

These initiatives must communicate to the public, not for headlines or ‘clicks’, but as part of the duty to inform and empower communities. Disseminating scientific information, however, is only one face of the coin of effective communication. The other is being able to measure the impact of the science on society and, more directly, on policymakers.

Often scientific fact and intuitive opinion are conflated, causing frustration between policymakers and scientists. Incorporating scientific knowledge into public policy requires policymakers to value its inclusion in the process. As policymakers are typically untrained in the scientific process, it is unreasonable to expect them to value the inclusion of the scientific process *a priori*. However, a potential process that can lead to inclusion of science into policy-making is via the demands of constituents. But to encourage constituents to demand science requires citizens that recognize not only the scientific process, but also the process of disseminating scientific conclusions. We teach scientific thinking that leads to the scientific method in schools, but science is much more involved. A significant part of the scientific discipline goes into the rigorous process of disseminating results. Scientific results go through a process of vetting by external experts and the community before becoming available for use as shared resources. Highlighting the data and conclusion-vetting process would aid in the realization that the scientific results have undergone significant expert review and, as such, are based on a much stronger fact and reason than are the opinions often held by lawmakers who must ultimately develop and fund science policy.

2. Constituent-prioritized science

It is understandable that constituent-prioritized science may appear alarming when considering diverse biases and beliefs. Social science research has found that it takes more unambiguous information to recognize and understand unexpected versus expected phenomena (Phillips and Beddoes 2013). People’s patterns of subjective expectations, called ‘mindsets’, often tell people what to look for, what is important, and how to interpret what they see. Mindsets tend to be quick to form but hard to change. How does one then break preconceived perceptions when facts may be less important than belief?

Scientists can influence mindsets when they engage the public and increase the reach of information obtained via the scientific process. One avenue for scientists to participate in outreach is by contributing to community forums. Regardless of how well and accurately the messages are received, communities feel valued simply by having the opportunity to hear and comment on information (Johnson et al. 2014). People like to be informed and to have a platform for

discussion. Even if they cannot fully understand all of the details of the topic, discussion is an important part of the learning process. Rather than being passive consumers of information, citizens then become active in the exploration of scientific results (Benham and Shimp 2007). Additionally, an important aspect of this process is the responsibility placed on science practitioners to explain the intricacies and implications to those with more limited understanding of fundamentals and the scientific method.

It is easy to blame lawmakers for poor policy decisions, but scientists have a crucial role to play in effective policy-making. Good science policy must take root from the ground up, not from top-down as is currently the case. Effective science policy must be grounded in a knowledgeable citizenry that demands that their elected officials include scientific expertise in decision-making.

3. Conclusions

As the general public demands increased involvement in policy-making, scientists need to regularly and avidly interact with the public through outreach in a more local, community-based stance. A citizenry with easy and regular access to scientific data will demand greater fact-based policy-making. Furthermore, as elected representatives are members of the community they represent, valuing scientific perspectives at all levels of governance will produce policymakers who are familiar enough with the scientific process to value its inclusion in policy.

Conflict of interest statement. None declared.

Notes

1. The National Research Agenda (Nationale Wetenschapsagenda Agenda) can be accessed at: <https://wetenschapsagenda.nl/routes/?lang=en>

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