

The Public Value of Social Policy Research: An Application of
the Public Value Mapping Method at the National Institute of
Justice.

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Introduction

Attempts to measure the benefit, or value, derived from government funded social policy research have traditionally focused on adapting economic models and variants of cost-benefit analysis.¹ These methods typically undervalue the social impacts of social policy research, and social science in general, because of their focus on commodifiable products deriving from, “systematic economic reasoning or...less systematic assumptions filtered through the *laissez-faire nostrums* embedded deeply in US political culture.” (Bozeman and Sarewitz 2005, 120) Social science research rarely produces a saleable product and benefits derived from social policy research are rarely quantifiable in any way. Thus, economic models frequently employ almost arbitrary assignments of value to research outputs and often ignore entirely the downstream social impacts, or research outcomes. The results of this mis-valuing of social science research have been two-fold; first, those efforts to measure efficiency in social science research that *have* gone forward systematically undervalue such research. Second, robust efforts to measure efficiency in government funded social science research have been few and far between.

Public Value Mapping (PVM) aims to correct both of the above identified problems in measuring efficiencies in government funded research by creating a measure not derived from economics or traditional efficiency measurement techniques employed in corporate settings. The study presented in this paper is one of the first attempts to deploy the techniques of PVM in a real-world setting, the National Institute of Justice (NIJ), and to examine some of the central assumptions of PVM in light of data gathered through a series of semi-structured interviews conducted with NIJ staff, NIJ grantees, and consumers of NIJ funded technology transfer. Our

¹ For the clearest exposition of this point see Barry Bozeman and Daniel Sarewitz, “Public values and public failure in US science policy,” *Science & Public Policy* (SPP) 32 (2005):119.

initial findings focus on the assumptions embedded within PVM dealing with use transformation value, scientific and technical human capital, and the impact of non-science mediators of social change on the organizational structure and public value context of government funded research operations. We will first offer an introduction of Public Value Mapping embedded within a discussion of the impacts of the economic bias in contemporary research evaluation. We will then review the methods employed in collecting and analyzing the data from the National Institute of Justice and offer a broad overview of the conceptual mapping of the NIJ research ecology derived from our data. We will conclude with a discussion of the impact of the inclusion of various non-scientists in the research funding process on NIJ's ability to perceive and react to the social context within which it operates and their effect upon the ability of NIJ to create a broad spectrum of procedural, technical, and scientific knowledge applicable to future research.

Public Value Mapping and the Measurement of Government Funded Research

The core assumptions upon which the Public Value Mapping Method (PVM) is constructed are derived from earlier work by Barry Bozeman and Juan Rogers where they developed what they referred to as the *churn model* of knowledge production (Bozeman & Rogers, 2002). The generative premise of the churn model of knowledge production is that present methods of research evaluation, which are predicated upon economic notions of commodity value, “often overlook aspects of value not easily reflected in pricing and pricing structures.”² The inadequacy of economics based research evaluation derives not from a failing in the precise methods employed but in a fundamental failure to grasp the intricacies of knowledge value. In short, much that is of value in knowledge production is distilled from the

² Barry Bozeman and Juan D. Rogers, “A Churn Model of Scientific Knowledge Value: Internet Researchers as a Knowledge Value Collective,” *Research Policy* 31 (2002): 770.

vapor of nuance and is not easily captured by models dedicated to reducing all measures to commodity pricing.

The churn model begins precisely from the point where economic modeling leaves off in so far as it takes as its core understanding is that knowledge is intransitive among users. (Bozeman and Rogers 2002, 770) The value of knowledge is synonymous with the use to which individual users put it. It is possible for information to be created and then to remain unused for a period of time, during this time of inactivity the information contains no value whatsoever and any attempt to attribute market value to it requires an unsupportable assumption about the potentiality of future uses. (Bozeman and Rogers 2002, 771-772) Once this information is picked up by an individual and put to use production, it is transformed into knowledge and acquires a value commensurate with the use to which it is put. (Bozeman and Rogers 2002, 772) This assumption, which is referred to as use transformation value, when coupled with the understanding that knowledge production is socially embedded within a community composed of both scientists and non-scientists is what leads Bozeman & Rogers to pursue a new model for measuring knowledge value in terms of the knowledge production capacity embedded within a community of ostensible knowledge producers. (Bozeman and Rogers 2002, 772)

The socially embedded nature of knowledge production proffered by Bozeman & Rogers leads them to theorize a community of knowledge producers which is broader and more inclusive than extant understandings of the social structures of knowledge production.³ Rather than ideological or disciplinary motivations underlying the coagulation of knowledge production

³ For more on various communitarian models of knowledge production see Peter M. Haas, "Knowledge, Power, and International Policy Coordination," *International Organization* 46, no. 1 (1992): 1-35. Scott Frickel and Neil Gross, "A General Theory of Scientific/Intellectual Movements," *American Sociological Review* 70 (2005): 204-232. Gretchen L. Gano et al., "'Shielding' the Knowledge Transfer Process in Human Service Research," *Journal of Public Administration Research and Theory* 2006, doi:10.1093/jopart/muj013. (Advance access published online on April 26, 2006)

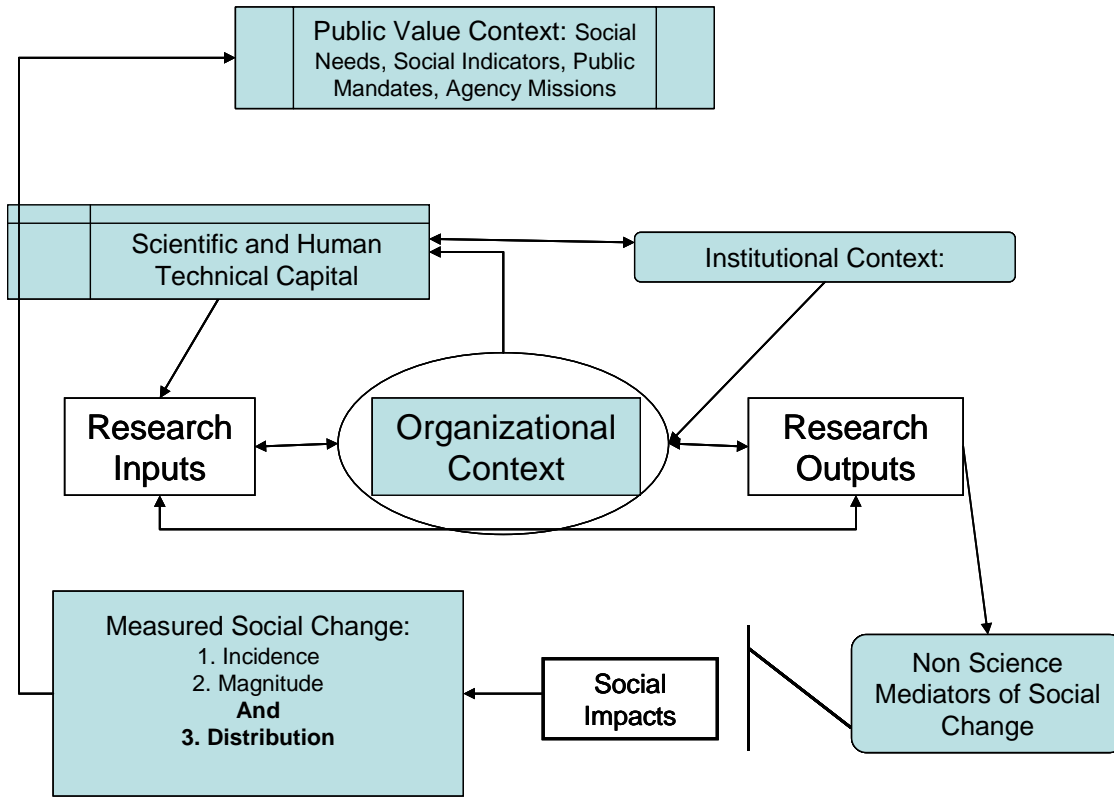
communities, Bozeman & Rogers perceive them as being bound together by the various, “social configurations promoting use.” (Bozeman and Rogers 2002, 772) The core motivating principle underlying the creation of what they refer to as knowledge value collectives (KVC) is the intransitive use transformation value, rather than market value or a single ideological directive outside of the knowledge production cycle. KVC’s, as understood by Bozeman & Rogers, are composed of individuals well beyond the traditional scientist including everyone from the legislator authorizing funding for specific research areas down to the non-terminal user of the information being produced. Many of these individuals are non-scientists, and are thus referred to in PVM as Non-Science Mediators of Social Change (NSMSC’s or Non-Science Mediators), yet are still integral to the knowledge production cycle. These individuals garner from the process of knowledge production a set of ever expanding scientific and social skills which Bozeman & Rogers refer to as scientific and technical human capital (STHC). This capital can be viewed in the aggregate, along with the actual physical infrastructure for conducting research, as the knowledge production capacity of a KVC. In many cases, STHC could even serve as the basis for the analysis of individual research projects in so far as their product often has no discernable market value but the outcome of increased scientific and technical human capital can be measured as an increase in the overall capacity of the KVC and, thus, a source of public value. (Bozeman and Rogers 2002, 773)

If we take a step back for a moment to examine the various components constructed by Bozeman & Rogers which combine to form the churn model of knowledge production it becomes clear that what they have produced is not merely a theory of how knowledge is produced but also the foundation for a method of evaluating the *capacity* for knowledge production embedded within a social configuration of knowledge producers.

Despite not having made use of PVM, it is possible to integrate the portion of this study conducted at NIH by Gano et al. with our results inasmuch as it appears to confirm many of the central assumptions of PVM. (Gano et al. 2006) Non-Science Mediators are perceived by NIH researchers and staff as having a tremendous amount of potential influence over the agency's research agenda. In order to respond to that influence certain structural changes were implemented in the way research designs were approved and research projects were managed. Despite the urge to limit the scope of the KVC, NIH researchers and staff were implicitly admitting that the agency's knowledge production capacity was greatly influenced by actors beyond the realm of the traditional researcher and associated staff. Simply focusing on the relationships between scholars, as in the older knowledge production models, and the research products they produce is insufficient in mapping research ecologies as we find them in the real world. It is similarly insufficient in terms of accurately gauging the public value produced in any knowledge production enterprise as use, which is synonymous with value, occurs most often outside of the boundaries of the core research organization, and that exogenous use feeds back constantly in shaping the future research agenda and knowledge production capacity of the KVC.

Finally, there are a number of concepts particular to PVM as an emerging set of methodologies that extend beyond the realm of the literature we have covered thus far. In his 2003 monograph Barry Bozeman outlined the specific techniques and concepts that became essential in our attempt to analyze the knowledge production capacity of the NIH KVC. In the theoretical model of a KVC, reproduced in Figure 1, Bozeman demonstrates the various units, and the linkages between them, we anticipated finding at work within and around NIH.

Figure 1.



The three most significant elements of the KVC for our purposes will be the Public Value Context (PVC), Organizational Context, and the Non-Science Mediators of Social Change described in detail above. The public value context of a KVC refers to the array of societal needs and problems within which the members of the KVC are perceived as operating. The public value context should, ostensibly, have a significant impact upon the research agenda that ultimately develops through the interaction of the various KVC members. Those interactions take place within an organizational context. This context consists of those rules and structures which govern interaction within the KVC, such as the Government Performance Results Act (GPRA) of 1993 or the legislative budgeting process, and it is through the organizational context that non-science mediators appear to most often gain access to the KVC. The most significant

non-science mediators at NIJ are the law enforcement practitioners who put the information and products produced by NIJ researchers to use in pursuit of the satisfaction of societal needs.

Methods and Data

The approach we took in attempting to operationalize PVM was unusual in that, while we had several hypotheses about the potential internal operations of NIJ based on the assumptions core to PVM, we had no *a priori* theoretical model or methodological predisposition. Instead, we proceeded upon the basis of a proof of concept, attempting to gather data in the broadest possible way so that we could test the strength of PVM's assumptions against NIJ's internal understanding of its own knowledge production dynamics. It was with this goal in mind that we elected to conduct semi-structured interviews and to analyze the transcripts of those interviews with ATLAS.ti, a textual analysis software package. The data that developed, while not as quantitatively robust as some applications would demand, was more than sufficient for creating the conceptual maps of the National Institute of Justice KVC that later proved invaluable for substantiating the model of knowledge production proffered by PVM and for supporting the assumptions that make the model possible.

The specific data collected at NIJ consisted of a series of semi-structured interviews. In conducting the interviews we were very self-conscious of the fact that, as Ray Pawson puts it in *Theorizing the Interview*, "*The researcher's theory is the subject matter of the interview, and the subject is there to confirm or falsify and, above all, to refine that theory.*"⁴ The interview instrument was constructed with the data needs of our loosely formed model of knowledge production in mind and the respondent's answers were parsed and responded to in order to gently restrain their tendency to stray into irrelevant areas. That restraint was extremely mild as we

⁴ Ray Pawson, "Theorizing the Interview," *The British Journal of Sociology* 47, no. 2 (1996): 295. *Italics in Original.*

understood that extemporaneous remarks were most likely to provide us with the candid data that would lead us to the actual knowledge flows at work within the KVC. Breadth and depth were our goals and the guidance offered to respondents in follow-up questions was designed only to permit the greatest degree of exchange in the limited amount of time allotted to each interview. A conversational style was employed in order to reassure respondents that we were looking for their genuine opinions and experience within the construct of our theory, rather than any more or less correct response.

We conducted eleven interviews with NIH executive staff and program managers. The interviews were conducted in 2003 at NIH's Washington, D.C. facility. The NIH staff subjects had to be provided with guarantees of anonymity in order to secure their cooperation and to protect them from potential retaliation in the event that any unfavorable details were published at a later date. The interviews lasted, on average, forty five minutes and were recorded for later transcription. In order to capture as many of the details of the research ecology surrounding NIH as possible we conducted a second set of interviews with what we referred to as "downstream" interview subjects. Two of these interviews were with NIH funded researchers and a third interview was conducted with the recipient of an NIH technology transfer grant. The NIH staff subjects were contacted for follow up and asked to provide contact information for each of these downstream subjects in connection with their previous answers and in each case they were more than happy to do so. The downstream subjects proved extremely useful in rounding out our mapping of the NIH KVC in that the context of their individual contacts with NIH were extremely varied and the two working scientists had also served on NIH peer review panels and were thus able to supply us with a broader perspective on the mechanics of that process. Given greater time and resources we would have liked to have included downstream interview subjects from

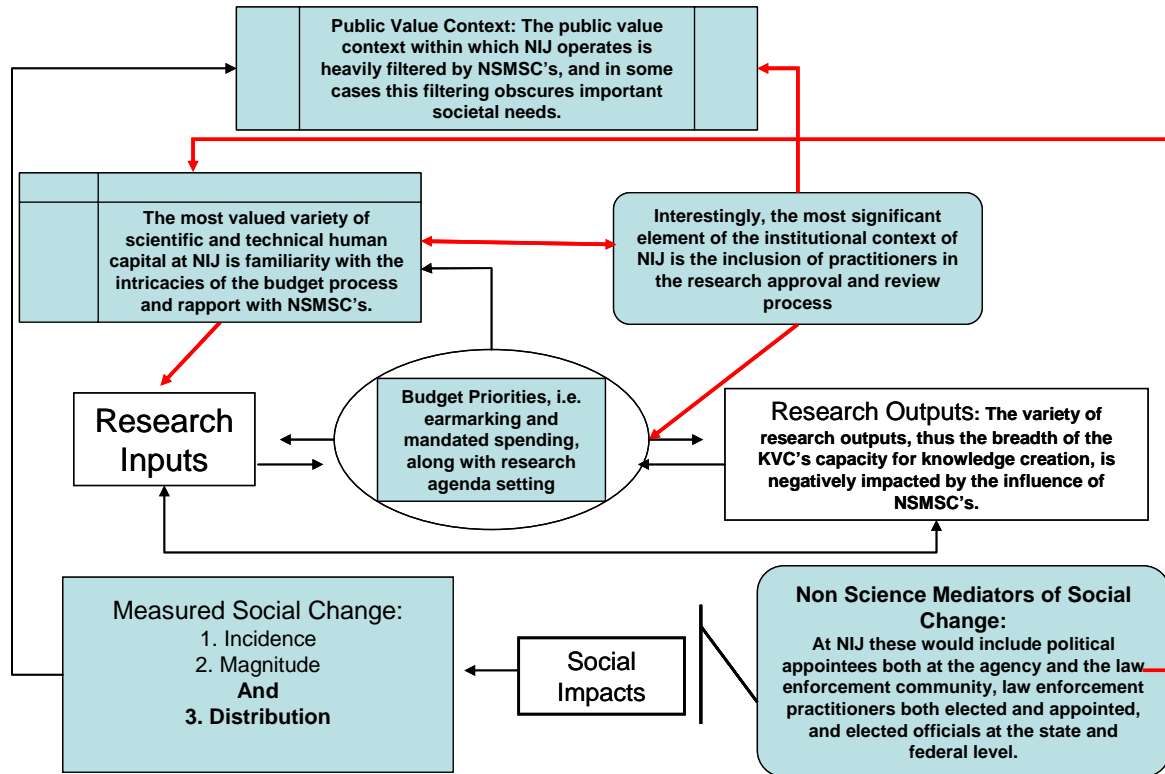
law enforcement and some of the various corporate vendors working in cooperation with NIJ to transfer publicly developed technology to the private sector.

The data analysis we conducted on the interview transcripts was very similar to, though not as strict as, a content analysis. We coded the transcripts using ATLAS.ti textual analysis software, which was created to facilitate the deployment of Glaser & Strauss' grounded theory.⁵ The interview data was coded for various recurring concepts and themes relating to the way research at NIJ was solicited, reviewed, funded, reported, and disseminated. The various code categories, which ATLAS.ti allowed us to mark with particularly descriptive titles, were then aggregated under a smaller set of grander themes and these themes were then compared to our initial loose model for fit. The original model, in the form of a map constructed by Bozeman in his PVM monograph (Figure 1), was then altered to reflect the specific organic structure of the NIJ KVC including its various component units and the knowledge creation flows between them (Figure 2).

⁵ Barney G. Glaser and Anselm L. Strauss, *The Discovery of Grounded Theory: Strategies for Qualitative Research* (New York, NY: Aldine De Gruyter, 1967), 2-3.

Figure 2.

Impact of Non-Science Mediators of Social Change



The NIJ map tended to confirm the PVM derived assumptions we had originally adopted about the way in which knowledge would be created within a research ecology. We derived a number of conclusions particular to NIJ from these conceptual maps which can be grouped under two aspects of the KVC: Organizational Context and the influence of Non-Science Mediators of Social Change.

Organizational and Public Value Context at NIJ

Organizational Context, as operationalized in PVM, we take to refer to the overarching structures governing the ways in which the various units of the KVC interact with one another. For example, legislatively mandated funding would be one aspect of the

organizational structure related to the way in which the KVC is able to allocate resources to various projects. NIH's organizational structure tends to be dominated by political elements like the legislative funding process or the appointment of officers by presidential administrations. Further, our interview subjects referred obliquely to congress and the executive exerting more direct influence over specific managerial decisions relative to research funding and dissemination which we will review in detail below. Finally, the organizational context at NIH is heavily influenced by the institutionally propagated norm of including law enforcement practitioners in each stage of the research funding and review process, this is part of the institutional context at NIH. The practitioners impact funding decisions and the activities of researchers in a variety of ways which we will address in greater detail when we examine the influence of Non-Science Mediators of Social Change.

The organizational context within the NIH KVC tends toward what we would describe as being hyper-political, meaning that the actors within the KVC are intensely sensitive to political necessities and funding decisions are governed *principally* by political concerns, which would appear to conform to PVM's assumption that scientific knowledge is often the least significant consideration in research funding. Politics tends to infiltrate the NIH research funding process through two primary paths. The legislature determines the overall funding level for NIH from year to year as well as wielding pervasive power to earmark funds on behalf of specific researchers or to mandate research in a specific area. The overall impact on NIH's yearly budget for R & D is to severely limit the amount of discretionary funding available to the agency. The bulk of NIH's budget is allocated from outside the agency, typically by Non-Science Mediators of Social Change acting through their legislative agents to impact research spending at NIH and elsewhere. Legislation can mandate the conscription of research funds for specific research

topics or areas without any real guidance on how broadly such restrictions should be interpreted. It can also, through the earmarking process, direct research dollars to specific geographical regions by way of naming individual researchers or particular research institutions. Ultimately, the impact is to leave very little discretion in the hands of the scientific and beaurocratic agents within the KVC in determining the direction of the agency's research agenda. Dollars determine the overall tenor of the research being conducted and those dollars are rarely allocated on the basis of scientific merit or any objective assessment of societal need, or at least such assessments are not conducted by the agency and are not apparent in the legislative funding process.

Legislative decisions regarding the allocation of research dollars may or may not be made on the basis of sound scientific knowledge. They tend to conform to the ideological perspective of the sponsoring legislator and/or the majority party within congress. The effect produced by this method of resource allocation is to reify the ideological perspective dominant within the ruling party or, perhaps if the party is believed to be accurately representing the expressed will of the people, the zeitgeist. In terms of socio-behavioral research, if the popular political sentiment focuses upon retributive incarceration policies or strict sentencing guidelines research which challenges the soundness of either of those policies is unlikely to receive funding, regardless of which perspective is objectively in the public's best interest.

Executive influence at NIJ is typically expressed through the appointment of the agency's director and executive staff. The director will set the overall tenor for the agency's research agenda and policies for the solicitation of projects and the dissemination of their results. The agency director can, and frequently does, exclude whole swaths of potential research topics on the basis of their congruence with the ideological perspective of the executive. Further, dissemination and communication strategies, which have a huge impact on the use

transformation value of an agency's research and the scope of an agency's knowledge production capacity, change dramatically between administrations and even between terms within a single administration. The impact of executive influence within the NIJ KVC is somewhat less direct than that of the legislature. We found that, while the president's cabinet was never perceived as directly ordering the pursuit of one or another variety of research, the instability produced by frequent changes in directorial tenor impacted the agency's time horizons and their ability to perceive the public value context within which they were supposed to be operating.

Sound science and political expediency are not necessarily mutually exclusive. The conclusions expressed above, that political control of the funding process tends to mitigate the influence of both science and any objective standard of public interest, is not synonymous with saying that legislative and executive influence on the funding process result in bad science. NIJ produces, on the whole, sound technological R & D and social science research with a high use transformation value. The influence of law enforcement practitioners on the research funding process tends to produce R & D outputs, both technological and socio-behavioral, that are eminently useful to those same practitioners. This level of influence is by no means wholly innocuous, but it does tend to preclude the production of research products which lie fallow for long periods before they become useful and help in the generation of new knowledge.

The impact of political influence upon the research agenda derives from three sources: the legislature, the executive, and law enforcement practitioners. The legislature exercises direct control over the agency's research budget, in many instances micromanaging the allocation of dollars to certain projects, researchers, and institutions. The executive influences the agenda in a less indirect manner through the appointment of the agency's director. The director can influence the way in which legislative funding mandates are interpreted, the overall

dissemination and communication policies of the agency, and the topical spectrum of research projects the agency engages in. Finally, practitioners exert a tremendous influence on the agency's agenda through the expectation that research will produce data, techniques, or products which are immediately practical to law enforcement and through control over access to data and research subjects. The influence of law enforcement practitioners will be discussed in greater detail in the following section. The impact of this tripartite political influence on the KVC is to place direct, ideologically motivated, limitations on the variety of research projects the agency can fund. The public value context the agency is expected to respond to is framed by these non-science mediators of social change and NIJ is frequently unable or unwilling to effect any robust investigation of objective social needs which could be met through its research infrastructure. Finally, the time horizon the agency operates within is severely truncated by the instability of the political climate at the agency. The real and immanent potential for a diametrical shift in political winds makes the agency's research managers and executive officers overly cautious in their evaluation of the research portfolio. Projects with especially long timelines are likely to be passed over in order to avoid the risk of losing sunk costs when the tenor of political control shifts yet again. In effect, certain crucial social needs may be ignored for reasons of political expediency and as a result NIJ's research agenda is narrowed. However, as noted above, the impact of this influence is not entirely negative as the agency tends to create research products with a very high use transformation value.

Non-Science Mediators of Social Change at NIJ

The impact of legislative and executive political influence within the NIJ KVC has had two effects. The first, mentioned above, has been to limit the acceptable forms of research the agency can fund. These limitations have been most severe in the area of social science research,

though we do not have sufficient data to make an argument as to which specific restrictions were manifested as a result of political influence. The research managers and executive appointees at NIJ reported that these politically motivated restrictions operated at two stages of the funding process, the first of which is detailed above.

The second way in which the research funding process at NIJ is impacted by the influence of NSMSC's is through the explicit and ubiquitous inclusion of law enforcement practitioners in the research funding approval and review process. These practitioners are no less politically savvy than their counterparts in the legislature or the White House and frequently are reported as taking into consideration the ability of a research project to be successfully completed when it does not appear to be politically acceptable. Frequently, problems with access to research subjects and data within the law enforcement community were cited as reasons a project should not receive further consideration within the review process or for altering that project's methods and hypotheses. These access problems were explicitly tied to the sensibilities of law enforcement officials as regards their voting constituencies or the constituencies of the policy makers who appoint them and approve their funding. The inclusion of practitioners in the research funding process also appears to have resulted in an overwhelming preoccupation with the practicality of research outputs. The defining criteria with regard to a research project's prospects for funding appear to be, even more significantly than political expediency, the product's ability to prove immediately useful within the law enforcement community, a decision which is not without political implications.

The impact of NSMSC's upon the organizational context of NIJ described above is but one element of the influence they have upon the KVC. Perhaps more worrisome to those observers who would see such researchers as responding directly to the needs of society, non-

science mediators act as a filter through which NIJ perceives the public value context to which it should be responding. Law enforcement practitioners bring a peculiar perspective on societal issues related to crime and punishment to bear on the funding approval and research review process. Legislators and members of presidential administrations frame societal issues for NIJ in ways that will guide research in directions which seem most politically efficacious to them, or, at the very least, less likely to damage them politically. While we were not able to adequately develop measures for comparing NIJ's perceptions of its public value context to the research outputs and outcomes the KVC produces this does appear to be the most promising method for evaluating individual research projects in terms of the public value they do, or do not, produce.

Conclusion

In conclusion, the National Institute of Justice knowledge value collective appears to conform closely to the assumptions embedded with the Public Value Mapping Method. Scientific and human technical human capital is highly prized and in many instances is cited as being absolutely essential to success as a researcher within the NIJ KVC. This preeminence of scientific and technical human capital makes the ability of NIJ research managers to supply such capital to new researchers of paramount importance and thus knowledge of the political vicissitudes of the funding process is highly prized within the KVC by both NIJ staff and established researchers. As predicted by PVM, the advancement of scientific knowledge is often the least significant factor in determining funding priorities within the agency. Of far greater significance to the funding process are political expediency and practicality to law enforcement practitioners.

These highly political motivations are introduced by virtue of the explicit inclusion of non-science mediators of social change within the funding approval process through the vectors

previously described. This politicization severely delimits the range of research proposals available for funding through NIJ, utilizing political acceptability and duration as crucial litmus tests. The timeline for NIJ funded research appears to be significantly reduced by virtue of the agency being so attuned to changes in political fortunes. The overall capacity to produce new research within the NIJ KVC appears to be negatively impacted by the hyper-politicized nature of its research funding process. However, the quality of NIJ funded research is not in question here; as with many other research agencies some research of less than exemplar quality is, occasionally, funded by the National Institute of Justice but, overall, their research portfolio contains projects employing sound methodology and producing products that are, by virtue of the funding process described above, tailored for immediate use. The practical nature of NIJ's research products redounds to the agency's favor in terms of use transformation value, wherein it is asserted that specific value only derives from the use of information, which is then transformed into knowledge. Specific NIJ research products have a high use transformation value but the KVC as a whole suffers from a significantly decreased capacity for knowledge production.

Public Value Mapping remains in the very early stages of development as a research evaluation method. While it is clear from the findings detailed above that, even at this early stage, PVM is capable of offering insight into the knowledge creation capacity of a KVC, as well as the structures and processes impacting that capacity, it remains unable to measure the discrete public value being produced by individual research projects. The measurement of research outcomes and their subsequent societal impacts remains a fruitful area of inquiry within the PVM paradigm. Further, examination of the linkages between a KVC's ability to perceive its public value context and its capacity for quickly and adequately responding to societal needs, as

discussed briefly above in the context of NIJ, remains inadequately developed. Finally, the development of an array of precise methodologies most amenable to Public Value Mapping is necessary before PVM can move forward as a robust tool for research evaluation.

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