

**Applied Behavioural Science in Support of Intelligence:
Experiences in Building a Canadian Capability**

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PREFACE

This paper is one in a series of commissioned papers that will be presented in September, 2009, at the Workshop of the Committee on Field Evaluation of Behavioral and Cognitive Sciences-Based Methods and Tools for Intelligence and Counter-intelligence for the Division of Behavioral and Social Sciences and Education (DBASSE) within the National Academy of Sciences' National Research Council. The aim of this paper is to share with our U.S. colleagues an emerging Canadian perspective on the importance of applying behavioural sciences research to improving the practice and organization of intelligence, as well as some of the challenges that are faced in building robust and productive partnerships between the scientific and intelligence communities.

Although the issues discussed here are illustrated with examples drawn largely from my own experience as an applied behavioural scientist developing and leading a small applied behavioural science research group in support of the Canadian defence and security community, I have little doubt that the issues themselves are quite general, applying to other behavioural research and intelligence organizations in other countries, and that the discussion of these issues will therefore be pertinent to applied behavioural scientists and intelligence practitioners working in other countries, notably the U.S.

Indeed, many of the insights and ideas developed here were triggered by events within the U.S. intelligence community. This is true even in terms of my own experience working with the intelligence community, which began with my participation as a co-panellist at a 2007 workshop hosted by the Office of the Director of National Intelligence (ODNI), which examined how behavioural science perspectives might contribute to the improvement of intelligence analysis. It was at that workshop that I first clearly perceived the vast potential for sustained scientist-practitioner collaboration in the intelligence domain, and, in turn, it was that vision that motivated me to press management within my own organization for the creation of a research group whose mandate it would be to apply cognitive and behavioural science research to better understanding and improving the practice and organization of intelligence for the defence and security community. I trace the development of the Thinking, Risk, and Intelligence Group (TRIG) that I conceived of and now lead, which offers a unique science capability in Canada, to that initial interaction a mere two and a half years ago. That experience taught me to value the often unpredictable consequences of professional interactions with new and diverse stakeholders, and to look for opportunities to strengthen existing partnerships and build new ones.

WHY BEHAVIOURAL SCIENCE?

Before delving further into the subject, a few words on the special focus here on *behavioural* science is warranted. I construe the term *behavioural* broadly in this paper to include science aimed at understanding human behaviour within its local and global environments, including the causes and consequences of such behaviour, both proximal and distal. Thus, the term is also meant to encompass areas of science that some might prefer to label as “the cognitive sciences” or “the social sciences”. I have no problem with the use of these other labels and am certainly willing to employ them myself in cases where they are more appropriate to the context. However, for the sake of brevity in this paper, I’ll simply refer to the collective as “the behavioural sciences”.

Since the intelligence community depends on the application of many areas of science that are not behavioural (e.g., the computing and physical sciences), one might wonder whether we ought to speak here even more generally about applied science without recourse to the descriptor, *behavioural*. My use of the term, however, is important and intended precisely for that reason. That is, the scope of the paper is not cast so broadly as to encompass all interactions between applied science and the intelligence community, but rather only insofar as it focus on issues that pertain to the emerging role of the behavioural sciences for understanding and improving the practice and organization of intelligence.

The behavioural sciences face special challenges in developing a productive partnership with the intelligence community precisely because their subject matter focuses on the cognitions, motivations, emotions, and behaviour of intelligence personnel and the persons and organizations they interact with in the course of fulfilling their responsibilities. Unsurprisingly, a quite natural inclination of many individuals, and certainly not only intelligence personnel, is to become somewhat reactive against ostensibly scientific pronouncements regarding the nature of their characteristics, including their abilities, biases, and limitations, especially when those pronouncements cast them in a negative light.

Such challenges may not be completely without justification, either. After all, behavioural scientists have been known on occasion to move with apparent ease from their limited experimental findings to sweeping statements about human nature, without much or even any systematic attempt to validate their generalizations (e.g., Milgram, 1974; cf. Mandel, 1998). Moreover, for better or worse, the adage that “bad news sells” applies to the publication of behavioural science findings as well. Thus, career advancement may be easier for behavioural scientists who can demonstrate new ways in which people’s thinking and judgment processes are systematically biased or error-prone than for those who attempt to meticulously ascertain the boundary conditions of such biases and limitations or how they might be mitigated, or who alternatively report findings that cast the quality of human judgment in a positive light. By comparison, I know of no physics faculty members whose promotion cases benefited from cleverly showing how human behaviour violates physical laws.

On the other hand, reactivity against the findings and conclusions of behavioural scientists is also to be expected on the basis of normal self-enhancement processes that guard individuals from potentially ego-threatening feedback. These processes lead most normal individuals to see their own abilities and performance through rose-colored glasses, which is why people exhibit tendencies such as unrealistic optimism (Weinstein, 1980, 1982), illusions of control (Langer, 1975; Langer & Roth, 1975), and tend to think that they are better than average on a variety of self-related positive dimensions (Alicke & Govorlin, 2005; Svenson, 1981). Whether such “positive illusions” are on the whole beneficial for the average person, as some have argued (e.g., see Taylor & Brown, 1988), or maladaptive as others have suggested (e.g., Colvin & Block, 1994) has been a fiercely debated topic; one that, perhaps unsurprisingly, remains unresolved.

Little or no attention has addressed how beneficial such self-enhancing biases might be among groups of experts that rely heavily on their unaided reasoning abilities for the conclusions they reach, the advice they give to decision makers, or the written judgments they produce. While incessant self-doubt can surely be paralyzing, I suspect that open-mindedness to the results of independent scientific examinations of their performance would generally bring more good than harm, both to the professional communities themselves and to the broader community in terms of their ability to decide for themselves what experts can actually offer and what level of trust they ought to place in their judgments. In many professional arenas that depend heavily on human judgment, applied behavioural science has played an important role in cultivating such understanding. Accordingly, there are now applied fields of medical decision making, legal decision making, etc., each with their own applied scientific journals (e.g., *Medical Decision Making*, *Law and Human Behavior*, *Behavioral Sciences and the Law*).

In contrast, there is not a single journal worldwide (at least not that I am aware of) specifically devoted to the application of behavioural science research to the practice and organization of intelligence and national security. Indeed, the behavioural sciences currently play a meagre role in intelligence studies, which is instead dominated by a mix of historians, political scientists, international relations theorists, and ex-intelligence personnel. Journals such as *International Journal of Intelligence and Counter-Intelligence*, *National Intelligence Journal* (formerly *Defense Intelligence Journal*), or *Intelligence and National Security*, while of undeniable value to the field of intelligence studies, hardly ever publish reports on behavioural science studies applied to the intelligence domain. Indeed, for reports to find their way into such journals they would have to be written in a manner largely foreign to behavioural scientists. If they were written in the standard format of a behavioural science paper, the typical readership might find the presentation foreign and the statistical analyses that usually accompany such reports unintelligible.

In other areas of intelligence studies scholarship, an appreciation of the value of behavioural science is also sometimes surprisingly absent. For instance, a recent chapter on the sources and methods for the study of intelligence by ODNI’s historian, Michael Warner, in the recently edited *Handbook of Intelligence Studies* makes no mention of the value of behavioural science research methods, theories, or findings (see Warner, 2009).

On the other hand, there are some signs that an appreciation of the value of behavioural science for understanding and improving intelligence is slowly developing. Thus, in the same edited volume James Wirtz writes “Scholars have turned to human cognition and psychology to understand both intelligence successes and failures. Scholars have identified several common cognitive biases that can impede analysis” (2009, p. 32).

The paucity of behavioural science research in intelligence studies speaks to a broader need for science education within the ranks of the intelligence and intelligence studies communities (Bruce, 2008; Lehner, 2009). It will be difficult for those inside the intelligence community to assess the findings of pertinent behavioural science research or appreciate their significance until they develop a satisfactory understanding not only the logic of the scientific method but also of the logic and language of statistics, which is a mainstay of hypothesis testing in probabilistic domains. The same requirement holds true for editorial board members of intelligence studies journals. This deficit, which may in some cases also belie a deep-seated bias against quantification, remains an important part of the cultural divide that currently separates the behavioural science community from the intelligence and intelligence studies communities.

If a more productive partnership between the behavioural sciences and the intelligence community is to emerge in the coming years, steps to bridge these gaps in knowledge will be important, and putting aside dogma about methods and practices will play a key role in achieving that objective. Likewise, it will be incumbent on applied behavioural scientists who devote their energies to assisting this community of practice to better understand their unique challenges and requirements, and to take steps to build trust within the intelligence community. Few behavioural scientists currently do, which is why I believe that efforts to bring the communities together in facilitative environments are so important (Mandel, 2009). I shall return to a discussion of how such bridges can be developed and are starting to be developed later in this paper. First, however, I shall turn to a discussion of how efforts from within the intelligence community have begun to sow the seeds of a viable science-practitioner partnership.

MAVERICKS ON THE INSIDE

While the application of behavioural science research to improving the practice and organization of intelligence is not entirely new, it has traditionally been restricted to the self-motivated efforts of a handful of “mavericks” within the intelligence community. These individuals have either raised issues for the community that correspond in important ways with those under the purview of the behavioural sciences, or they have gone even further by taking the time to look outside their own areas of expertise, importing and adapting what they ascertained to be relevant for the intelligence community into even more operationally-relevant terms. My comments here are merely illustrative; fuller descriptions of such individuals within the U.S. community (and the Central Intelligence Agency [CIA], in particular) are offered in Jack Davis’s introduction to *Psychology of Intelligence Analysis* (1999).

Sherman Kent's "complaint" that the intelligence community lacked a professional literature provides an example of the former. As Kent (1955, reprinted in Steury, 1994) wrote, "Consider such disciplines as chemistry or medicine or economics and ask yourself where they would be today if their master practitioners had committed no more to paper than ours." Kent's attention to the importance of a professionalized practice with both a secret and unclassified literature has influenced efforts to achieve these objectives to this day (e.g., see Marrin, 2009; Swenson, 2002). As head of the CIA's Office of National Estimates and a scholar of European history, Kent was also deeply concerned with developing standards for ensuring the rigour of intelligence estimates and he understood the importance of applying scientific standards and methods to the practice of intelligence. One area of concern was in the communication of meaning through language. In particular, Kent was keenly aware of the vagaries and ambiguities of verbal expressions of uncertainty and sought to develop standards to ensure that the interpretation made by intelligence consumers of terms such as "likely" or "probable" would be consonant with the intended meaning of the analyst and defensible in light of the strength of evidence in support of such probabilistic estimates. Thus, in his essay *Words of Estimative Probability*, Kent (1964, reprinted in Steury, 1994) wrote:

It [The National Intelligence Estimate] should set forth the community's findings in such a way as to make clear to the reader what is certain knowledge and what is reasoned judgment, and within this large realm of judgment what varying degrees of certitude lie behind each key statement. Ideally, once the community has made up its mind in this matter, it should be able to choose a word or a phrase which quite accurately describes the degree of its certainty; and ideally, exactly this message should get through to the reader.

In outlining these concerns, Kent not only foreshadowed the development of an area of judgment research devoted to the understanding of verbal probabilities and their mapping to numeric probability estimates (e.g., Wallsten, Budescu, & Zwick, 1993), he also spotlighted the important fact that the vast majority of intelligence statements were products of human judgment reflecting degrees of belief based on uncertain evidence rather than simple statements of fact based on complete knowledge.

Kent and others set the intellectual stage for even more ambitious attempts to improve the practice of intelligence analysis through the application of behavioural science. Clearly, the most striking example of that sort of maverick effort is Richards Heuer, Jr.'s (1999) seminal book entitled *Psychology of Intelligence Analysis*. Heuer, a career analyst at CIA, understood that intelligence analysis was largely an exercise in human reasoning and judgment and that the main tools of analysis remained the cognitive skills and abilities of the analysts themselves. Heuer's book serves as a superb example of *knowledge integration*. Heuer not only reviewed a large body of literature in cognitive psychology spanning disparate topics such as human perception, memory, thinking, and judgment, he also successfully translated those behavioural research findings and ideas into operationally-relevant terms that provided a basis for generating recommendations

for the development of structured analytic techniques. Most notable among these contributions was the development of the *analysis of competing hypotheses* (ACH) approach, which was subsequently developed into a freely-available software tool and which has since been refined and extended in a number of ways (see Heuer, 2008).

ACH illustrates the powerful effect of knowledge integration on analytic-method development process. The technique, which essentially involves a series of steps designed to improve the analyst's hypothesis-generation and hypothesis-testing processes, reflects Heuer's understanding of the "heuristics and biases" and "mental shortcomings" literature (e.g., Kahneman, Slovic, & Tversky, 1982; Nisbett & Ross, 1980) as well as his appreciation of the need to develop debiasing techniques that would mitigate the potentially detrimental effects of the tendency to seek confirmation for one's preferred hypothesis. That a single individual outside the field of cognitive psychology was not only able to do justice to the interpretation of its literature, but to also formulate recommendations for corrective procedures that have since become a standard part of intelligence analyst training and practice is a truly remarkable feat. Yet, as I shall argue in the next section, it is precisely because Heuer's accomplishments are so remarkable that they lay bare the fact the intelligence community cannot afford to rely on the fortuitous emergence of the occasional maverick. A more systematic arrangement—one that directly engages the scientific community—is needed.

HEADING TOWARD AN INEXORABLE CONCLUSION

There are a number of interconnected reasons for drawing the foregoing conclusion. The first is what I'll call the *opportunity cost argument*, which goes like this: If the fortuitous emergence of "a Heuer" yields such a high payoff, then the opportunity cost of maintaining the status quo in terms of *not* investing in a systematic process of knowledge exploitation must undoubtedly be great. Arguments to the contrary would seem unsustainable unless one were to ascribe near-heroic status to Heuer or others like him, choosing to believe that only the occasional lone maverick (and not a team of devoted applied behavioural scientists) could reveal important findings that inspire operationally-relevant recommendations for the intelligence community. Clearly, while it is one thing to be guided by heroic fantasies, it is quite another to let oneself be misguided by them.

A second reason why a more systematic partnership with the behavioural science community is needed is what I'll call the *currency cost argument*, which is simply the fact that occasional mavericks, no matter how talented they may be, cannot do a good job of keeping the community up to date on a regular basis. Heuer's book is a good example of this in at least two respects. First, although it was published in 1999, most of the research he reviewed was published in the 1970s and 1980s. I suspect that this gap largely reflects the fact it takes considerable time for time-strapped practitioners to learn about new fields of knowledge and to find ways to integrate it for the relevant applied community. Second, one must ask who has come along since Heuer to continue to

translate the findings of cognitive psychology and other relevant fields or disciplines into relevant terms for the intelligence community. To my knowledge, no one has. Thus, there is at least a quarter century of new research findings in cognitive psychology alone waiting to be exploited.

A third reason why a robust partnership is needed is what I'll call the *resourcing cost argument*—namely, to build an effective applied behavioural research capability within the intelligence community would, in the first instance, draw significant resources away from operational areas (assuming a fixed budget for human resources) and, in the second instance, would face serious competition for the brightest and most motivated scientists from academia (with its unparalleled freedoms) and industry (with its lucrative salaries). A more sustainable solution would be to develop partnerships with institutions that already have significant human resources with the relevant expertise. Their interest in the applied subject matter may have to be cultivated, but with the right incentives that should be an achievable goal. Nor are those incentives likely to be strictly or even mainly monetary. Many behavioural scientists, especially those well established in their careers and no longer having to worry about securing tenure, would value the opportunity to have their work make a difference. This should come as no surprise since it is not uncommon for government officials to have come from former academic posts. Of course, there would be some, especially in academia, who are ideologically opposed to working with the intelligence community, but there would also be many others proud to offer their expertise in the service of national security.

Finally, there is what I'll call the *multiplier effect argument*, which in some sense involves “looking beyond” the resourcing cost argument. That is, the benefits of developing robust partnerships with the behavioural science community go far beyond the frontline research partners' direct contributions and reflect the community's ability to tap into vast networks of expertise via those frontline contacts. A behavioural scientist recruited from graduate school into an intelligence organization's research unit will likely have most of his or her colleagues in the same unit and a few from outside this network. In contrast, a scientific partner in academia will have a much wider network of scientists and scholars from which to draw knowledge and ideas. Thus, each new immediate scientific partner outside of the intelligence community actually taps into a potentially vast knowledge network, multiplying not only the amount, but also the diversity, of resources at the intelligence community's disposal.

By diversity, I am referring here not only to the vast interdisciplinary networks that comprise universities and private and governmental research centers, but also to the diversity of perspectives. No matter how talented the scientists recruited to an intelligence organization may be, it is likely that the organizational imperatives conveyed formally through policy and informally through norms will narrow the diversity of their orientation towards science itself. In all likelihood, such scientists will be rewarded for focusing on operational issues and discouraged, overtly or tacitly, from delving into “basic” research, coming to see it (in part, due to the self-enhancement processes noted earlier) as largely “a waste of time.” But science and its stakeholders, I believe, benefit most when the “basic” and “applied” perspectives are allowed to mix and stimulate each

other. This is not always an “easy marriage,” but I believe it is better than “living alone.” In much of what follows I draw from the lessons learned in my experience building an applied behavioural science research capability for the defence and security community in Canada to highlight both the significant opportunities and challenges that may arise.

FROM ODNI TO TRIG

First, I must stress the importance of being poised to capitalize on opportunities that may fortuitously arise and on taking action and exercising initiative when the conditions are amenable to transformative change. Opportunities are often borne from the intersection of seemingly unrelated events and conditions. Seizing them not only requires that such intersections be perceived as opportunities, but also that one understands how one might use such opportunities to achieve desired outcomes.

As I alluded to earlier, the development of TRIG resulted from a fortuitous interaction of events. I had already been working with a co-panellist of the aforementioned ODNI workshop, and when the ODNI workshop invitation was extended to him he was kind enough to ask the organizers that I also be invited. That experience also happened to make the link between the behavioural sciences and intelligence analysis particularly salient to me because most of the other scientists at that workshop were people I had either known about or had actually known, some quite well. On the other hand, my interactions with members of the intelligence community were entirely new and stimulating since they revealed to me firsthand a set of applied challenges that seemed to call out for precisely the kind of behavioural science research skills I was seeking to apply. Moreover, since Defence R&D Canada – Toronto (DRDC Toronto) was undergoing a major science and technology (S&T) capability review and realignment process, the timing was right to make the case for the value of developing a research group devoted to the application of behavioural science research to the intelligence domain. This was not too far of a stretch since DRDC Toronto was already responsible for S&T capability in the human sciences. Moreover, DRDC’s CEO had recently expanded the agency’s mandate to include serving not only the defence community but the broader security community as well.

Roughly one year after the ODNI meeting, my concept proposal for TRIG was accepted and the group was official stood up. One cannot say that any of the events that led to TRIG’s creation were random, and yet without the proper confluence of factors, which each on their own were of seemingly minor importance, the opportunity would not have presented itself. While TRIG was congruent with the top-down directives at DRDC, it was certainly not handed down by management. Thus, an important lesson I have drawn from the experience is to not underestimate the potential of bottom-up influences on organizational change (notwithstanding the importance of also having an enlightened and supportive leadership team). Cynicism regarding the ability to effect such change, I suspect, is responsible for a great deal of missed opportunities. Another important lesson I drew from this experience was the value of face-to-face interaction. Talking with

intelligence analysts, directors, and educators firsthand about the human challenges that their community faced was deeply motivating to me as a researcher, not to mention the important role that such interactions undoubtedly played in building those partners' trust. The same motivational effect could hardly have been achieved by simply reading about the issues in book chapters, journal articles, and technical reports.

BUILDING PARTNERSHIPS

The 2007 ODNI workshop also highlighted a number of key challenges that would be faced in building a profitable partnership between the behavioural science and intelligence communities. Meetings were useful for highlighting issues and creating an initial buzz of excitement, but they also revealed the degree of separation between the two communities and the need to structure opportunities for interactions in ways that allow more time for a coordination of interests and understanding. I thought that it would be valuable in the future for the intelligence (and, in particular, analytic) and scientific communities to have more time to interact directly. On the one hand, for behavioural scientists to begin to tailor their knowledge to this community, they would need to know something about analysts' tasks, challenges, and operational environments. Talking to some of the scientists there, it became clear to me that they wanted to know more. On the other hand, for managers and analysts to benefit fully from scientists' findings and insights they would need to have opportunities to talk with them about relevant issues. The few minutes following a speaker's talk are clearly insufficient for those purposes.

The opportunity to come together and talk freely in small groups comprised of intelligence personnel and scientists seemed an important next step. Not only would such interactions move away from the rigidity of strictly timed presentations with punctuated coffee breaks (where, despite the usual suggestions to meet new people, delegates tend to talk to those they already know), it would allow the prospective partners to begin to develop familiarity with each other, clarify their perspectives, and explore opportunities for collaboration beyond the specific event.

Thus, once TRIG was launched, I set about the task of partnership building using a multi-pronged approach. First, within the Canadian context, I looked for opportunities to meet with members of the intelligence community who were willing talk. These meetings almost always led to the development of a branching network of contacts, most of whom were usually quite willing to share information on their methods and practices and who occasionally turned to us for scientific advice. Not each of these interactions led to a new collaborative arrangement—thankfully, since we started out with a group of three (myself and two newly recruited junior scientists)—but these (usually) face-to-face meetings achieved at least three objectives. First, we were generating awareness of TRIG, its mandate, and its members' capabilities. Second, we were learning firsthand about the Canadian intelligence community, including the similarities and differences in perspectives and approaches across the various organizations. Third, we were developing a network of potential partners and stakeholders.

Some of these individuals and the organizations they represent are now formal partners of ours. One notable example involves our collaboration with the International Assessment Staff (IAS) of the Privy Council Office (PCO), a strategic intelligence organization serving senior policy makers in the Canadian government. As a result of initial face-to-face discussions with some IAS directors, the Director of the Middle East and Africa Division and I forged a good working relationship, which was eventually formalized into a memorandum of understanding between DRDC Toronto and IAS.

In our first meeting, I learned that this director was deeply interested, as Sherman Kent had been, in improving standards for promoting analytic rigor and for improving the communication of uncertainty. In turn, he learned that my research interests were in the areas of judgment and reasoning, and he invited me to attend a second meeting where he presented the initial results of a quality-control exercise he was running. He had been tracking the outcomes of the predictive judgments of his analysts in order to ascertain their long-run accuracy. I was impressed by his effort and offered to refine the statistical analysis of the data he had collected by running calibration and discrimination analyses of the judgments. From there, our partnership was formed. We have worked not only on the calibration study but also on refining standards for analytic practice. Since then, it has become apparent that our collaborative study is quite unusual, if not unique, within the broader intelligence community. While Rieber (2004) had discussed the potential value of calibration analyses for the analytic community, no one had yet conducted a calibration study of analysts. Our findings have attracted interest from both the behavioural science and intelligence communities. In May, 2009, for example, I was invited to present the findings to the National Academy of Sciences Committee on Behavioral and Social Science Research to Improve Intelligence Analysis for National Security at their public workshop.

Another important partnership building exercise involved finding a military sponsor for TRIG's work. Given that DRDC is a full-service S&T agency of the Department of National Defence, our main sources of research funding come through sponsorship arrangements with parts of the Canadian Forces. These sponsorship arrangements usually provide for 3-4 years of project funding. We were successful in our first proposal for sponsorship by the Chief of Defence Intelligence (CDI) to pursue a four-year program of applied behavioural science research aimed at understanding and augmenting human capabilities for intelligence analysis. That project began on April 1, 2008, only a few months after TRIG was stood up and less than a year and a half since I had attended the ODNI workshop on that very topic.

A key deliverable for the definition phase of that project was to organize a workshop that would bring together stakeholders from the behavioural science and intelligence communities. Rather than promoting the workshop as a DRDC event, I sought to co-sponsor the event under the banner of the Global Futures Forum's Community of Interest on the Practice and Organization of Intelligence (COI POI). I proposed the idea for a workshop on the role of cognitive and behavioural science in improving intelligence analysis to its director at the 2008 GFF General Meeting in Vancouver in April, 2008, explaining that my intent was to build on the earlier ODNI

workshop in such a way that afforded participants a greater opportunity to discuss ideas in a semi-structured “working group” environment. The COI POI director eventually agreed to the arrangement, which was extended to a three-way partnership with IAS, a strong past supporter of the COI POI and GFF.

Organizing that meeting was a challenge on many levels. Foremost among them, soon after our agreement to move ahead, the GFF had lost CIA funding. It was unclear whether the GFF would even continue. I had to decide whether to ride out the uncertainty or fall back on a safer option that would ensure that we met our project deliverable on time. I decided to ride it out, as GFF first migrated to ODNI and then to the State Department. That uncertainty created other stressors. We could not begin to recruit speakers until some of the uncertainties were resolved, yet I realized that the delay would likely make it impossible to recruit the caliber of scientists I had hoped for. Twice, we were forced to postpone the meeting. Senior management appeared unhappy because the DRDC’s CEO had to be rescheduled after one cancellation. In order to make it come together, the director and I had to work at a frenzied pace, often exchanging email messages after midnight and on weekends. In the end, however, the COI POI Ottawa Roundtable, entitled “*What Can the Cognitive and Behavioural Sciences Contribute to Intelligence Analysis? Towards a Collaborative Agenda for the Future*”, did come together and was hailed by many of the participants, DRDC’s senior management (including its CEO), and the project sponsor as a major success. Had I taken the less risky option of going it alone, there is no doubt the end result would have had far less impact, would have had less international participation, and would not have cultivated the partnerships, both personal and organizational, that evolved in the planning process. Thus, the experience taught me firsthand the importance of investing in partnerships and of taking calculated risks.

OPPORTUNITIES AND CHALLENGES

To date, my experiences in building an applied behavioural science capability in Canada to serve the intelligence community has been mainly positive, reflecting the many opportunities for science-practitioner partnership that exists in this area. However, those experiences have also highlighted for me some important challenges that the behavioural sciences and intelligence communities face in developing robust and productive partnerships. One of those challenges involves coordinating the interests of prospective partners. In an important respect, the experience of developing TRIG is unusual. We are part of a federal government S&T agency mandated to serve Canada’s defence and security community through applied science. Like our colleagues in academia and industry, we are behavioural scientists, but like our partners in the defence and security community we are focused on operational effectiveness and, more generally, providing real value to our partners. Thus, organizationally, we are located in the middle between pure research and practice. This offers distinct advantages, since we tend to relate to both the pure research and practitioner perspectives fairly well and have relatively good access to both networks, even though our mandate—applied research—is

neither of these. TRIG, however, is currently comprised of four scientists and will at full capacity have five, maybe six. Thus, it (and small government research centers like it) can only do so much, and much of our efforts must be spent on knowledge integration in addition to new research.

How effectively, then, can the intelligence community tap into the broader academic network where the vast majority of behavioural science “horsepower” resides? Part of the challenge is that academic researchers tend to engage in science for its own sake. They conduct research to test hypotheses that are of theoretical interest to them and a handful of others with whom they are engaged in scholarly debate, even if the theories have no evident applied value. This is not a bad thing over the long run even for applied interests. Many of the ideas and findings Heuer integrated were generated by behavioural scientists who had little if any applied interests. Their work ended up being of value to applied communities not because of their applied interest, but because of the diligent efforts of knowledge integrators. That is why knowledge integration is an indispensable part of what applied S&T organizations like DRDC do. However, I suspect that for many of the original researchers who might have expressed “applied interests”, applied research might have meant little more than the opportunity to test whether their ideas or findings would generalize to a more externally valid situation. The primary aim would still be to test their theory, not to solve a practical problem. In contrast, the intelligence community is likely to be interested in research only insofar as it yields a practical benefit or at least the prospect of benefit.

These alternative interests continue to pose a challenge to effective science-practitioner partnerships. One strategy for dealing with it, of course, is to target the minority of behavioural scientists who have already demonstrated a genuine interest and skill in applying science to improving professional practice, even if their past experience has not specifically been in the defense and security realm. For example, this was an important consideration in the selection of scientific speakers for the 2009 COI POI Ottawa Roundtable I mentioned earlier. We specifically sought a mix of scholars in the behavioural sciences, some whom already had experience working with the intelligence community, but some whom did not yet who had made significant contributions in other applied areas. Indeed, we thought that it would be important to expose the latter group to this new community in the hope of generating their longer-term interest.

Another strategy that might help develop a pool of scientists more adept at understanding the specific challenges of the intelligence community would be to create a resident scholars program, where scientists could work onsite for a significant period of time (e.g., a semester up to a year). Their presence might also sensitize some intelligence personnel to the value of science. In the U.S., such programs might be implemented in part of the intelligence community mandated with an educational and professionalizing role, such as the CIA’s Sherman Kent School, CIA University, ODNI’s “virtual” National Intelligence University, the National Defense Intelligence College (NDIC), and the Defense Intelligence Agency’s Joint Military Intelligence Training Center (JMITC). Opening JMITC’s 4-eyes analytic training workshop to the broader educational and research community, as it has done this year through partnerships with James Madison

University and the University of Mississippi, can also help foster better mutual understanding and promote the infusion of interest from the broader scholarly community. However, as noted earlier, workshops are only starting points for partnership building and the intelligence community will require additional support mechanisms to turn the potential for collaborative relationships into reality.

Another way of promoting scientific interest in intelligence is to create viable long-term funding opportunities for researchers. Steven Rieber and Neil Thomason (2005), for instance, have proposed the US should establish a National Institute of Analytic Methods (NIAM), akin to the National Institutes of Health (NIH), with the suggestion that it have an operating budget of about 1-2 percent of NIH's. A stable funding source for scientific research is important because it creates the conditions whereby a research could conceivably build a career devoted to applied science in support of the intelligence community. Irregular funding opportunities, such as special one-time grants, in contrast, are unlikely to be effective in building a scientific cadre devoted to intelligence and security issues. Rather, such funding sources tend to be quite specialized, often constraining the scope of the work to a narrow topic from the outset. Researchers who do not anticipate having to reapply for a subsequent grant are also likely to be less concerned about performance. Since grants are not like contracts (with clearly specified deliverables), there is little way to ensure productivity except through the incentive of future grants, as is the case with the major granting agencies for scientific research. Thus, something like NIAM (or something even broader that includes other aspects of intelligence beyond analysis per se) could establish an important precondition for the emergence of a scientific research-based field of intelligence studies, where scientists could make a career of conducting scholarly work in this area.

The difference of perspectives on what science is about is, of course, only one aspect of the cultural divide between academic and applied communities. Academic researchers tend to believe that science unfolds at its own pace—an attitude that is often inculcated early on in graduate school. They are thus generally perturbed by strict deadlines, which they feel encroach on their creative abilities and usual freedoms. This may be true. However, the practitioner community tends to work on stricter schedules, often out of operational necessity or because of inflexible government guidelines (e.g., where contracts are let). The practitioner community, too, tends to have little tolerance for complaints from the ivory tower, which only reinforce stereotypes that, when push comes to shove, academia—at least in the behavioural sciences—has little of value to offer. Even having worked with behavioural scientists in academia who are quite well experienced in dealing with applied or governmental organizations, I have found that most do not adhere to deadlines of contract deliverables and tend to want to change treat even the deliverables themselves as only rough guides to final products. This can be quite frustrating and erode trust (not only of a particular researcher, but of the wider community to which he or she belongs) even if the work eventually complete is of high quality. I have found that it is best to be clear and frank about expectations early on since one's assumptions about how “things normally work” or ought to work are often not shared by new partners. Likewise, it is advisable to encourage one's partners to be equally open and seek clarification about issues that might be especially relevant to them

(e.g., ownership of intellectual property).

A final challenge I will touch on has to do with access to intelligence personnel for applied behavioural science research. This challenge actually has a number of aspects to it. First, there is the credibility issue. Conclusions about human judgment drawn from research on non-expert undergraduate convenience samples will likely fail to convince decision makers in the intelligence community that they need to act on those findings. Quite reasonably, they are likely to ask, “But how relevant are these findings for assessing and ultimately improving the performance of my staff?” Of course, this does not mean the findings are irrelevant, but they will be less convincing if the core findings are not demonstrated with real intelligence personnel as research participants. Thus, in order for applied science to be taken seriously, there is some pressure to locate access to intelligence personnel for research purposes.

This creates a second challenge—namely, finding opportunities to do research with intelligence personnel without disrupting their operational tasks and environment. Managers of operational units are likely to be reluctant to give away their analysts’ and collectors’ time for research purposes, especially if the outcomes of the research are of uncertain practical value. If they are willing to do so, depending on the nature of the research, the researchers might need to have appropriate security clearances in place, which could take several months to years from the initiation date. Moreover, even if the researcher does not require access to classified information, some intelligence personnel might be less willing to participate in research conducted by a researcher who has not been cleared at least to a SECRET level. In some sense, this is taken as a mark of the researcher’s reliability and establishes an acceptable baseline level of trustworthiness.

I became keenly aware of the extent to which security clearances could potentially pose obstacles to scientist-practitioner collaboration when I began exploring the possibility of a collaborative arrangement with IAS on the calibration research. Initially, it seemed infeasible for me to analyze the data that the director had collected because I “only” had Top Secret clearance, and was missing the Special Access clearance required to view the reports. It was only after face-to-face discussion in which I made it clear that I did not need to see the reports themselves but only the abstracted numeric values of probability, and the codes of variables such as outcome occurrence, judgment difficulty, and rated importance for policy decision makers, that it became evident to all parties that the information required did not necessitate even a Secret clearance.

Given that intelligence personnel are not prone to thinking about their assessments in this sort of de-contextualized manner (after all, why would they?), it is important for the scientist to be prepared to offer alternatives that would allow the research to proceed while respecting legitimate security requirements. This not only requires being able to explain the value of research analyses clearly, it also requires a certain degree of respectful persistence after hearing that a particular venture may be “impossible” because of the lack of clearance. Of course this is another reason why face-to-face dialogue is so important—many issues need to be negotiated between the various stakeholders.

In my experience, the issues I have raised are not insurmountable challenges, but they do require patience, flexibility, creativity, and a robust network so that opportunities for research that do arise are not missed. Some specific recommendations include the following: First, applied researchers need to be in contact with decision makers in intelligence organizations and periodically, at least, explore options for collaborative partnerships. This is critical not only for situational awareness of research opportunities but also for influencing decision makers who have the power to effect organizational change.

Second, partners should explore opportunities to conduct research on naturally occurring performance measures. For example, the calibration research that I am conducting in partnership with IAS does not take any time away from analysts. The data for our study are based on our own analyses of the analysts' work product—intelligence assessments. This not only has the advantage of taking no time away from analysts, it is also 100% externally valid since the subjects are real analysts and the data is based on the products of their normal activities.

Finally, when the research to be conducted is not part of the analysts' or collectors' normal activities but rather involves experimental tasks, researchers might be able to lessen the burden on personnel and imposition on operations by exploring opportunities to conduct research in training or other force development environments. We have adopted this approach in Canada. Many of the studies currently being run by members of TRIG are being conducted in collaboration with the Canadian Forces School for Military Intelligence (CFSMI). For example, one study involves testing whether a brief 30-minute training module on Bayesian reasoning might lead to improvements in the accuracy and coherence of trainees' posterior probability judgments.

That study has been successful in several respects. First, we did observe an improvement in the quality of trainees' judgments following training. Thus, their experience in the research may have been valuable from a learning perspective. Second, the course manager had the opportunity to further diversify the training experience for trainees by bringing in outside experts. Our team, of course, also debriefed trainees extensively after the study was completed and presented them with our preliminary results. Third, the course manager now has an additional training module that has already been validated through scientific research and which is relevant to the course curriculum. Fourth, we were able to develop a productive research partnership with the course manager that has since expanded to a number of other topics, some of which were motivated by his interests in ascertaining the effect of parts of the course on trainees' subsequent beliefs and behaviour. Finally, members of my scientific team were able to gain first-hand experience working in an intelligence-training environment. This not only gave them a better understanding of that environment and the curriculum being taught, it also provided an opportunity for building their own confidence as capable applied scientists who could take their expertise "into the field."

CONCLUDING REMARKS

Although there are many real challenges to overcome in building robust and effective partnerships between the behavioural science and intelligence communities, I do not regard any of them as insurmountable ones. Initial setbacks are to be expected and should not be cause for abandoning the effort. Scanning for opportunities is vital and, thus, researchers must be prepared to shift plans to capitalize on them when they arise. The frequency with which opportunities present themselves is in turn a function of the various aspects of good collaborative behaviour on all sides. Developing and expanding networks and building trust within them are essential requirements, at least partly under the partners' control. Beyond the controllable factors, it also helps to have good luck.

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