

Applying Social Sciences Research for Public Benefit Using Knowledge Mobilization and Social Media

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1. Introduction

The social sciences and humanities (SSH) matter. They matter because they help us understand and address *wicked problems*. Wicked problems are persistent problems about which there is little agreement on solutions. Not all the stakeholders are known, end points are equivocal and when interventions are introduced the problems themselves might change. We can address wicked problems but we have a tough time eradicating them. Wicked problems “occur in a social context; the greater the disagreement among stakeholders, the more wicked the problem. In fact, it’s the social complexity of wicked problems as much as their technical difficulties that make them tough to manage” (Camillus 2008, 100). Wicked problems are therefore social problems. Wicked problems are problems of the social sciences.

All of the "wicked" problems such as poverty, housing, immigration, climate change, security, at risk kids, Aboriginal issues, social determinants of health - to name a few - embrace issues related to the social sciences. New solutions that help address these wicked (i.e. social) problems are referred to as *social innovations*. Definitions of social innovation abound (Cahill 2010), but one of the most elegant is from Louise Pulford formerly of the Young Foundation in the United Kingdom who describes social innovations as “devising new and better ways to tackle social problems” (Policy Horizons Canada 2011). Social innovations can be developed by for-profit or not-for-profit organizations, by individuals (called social innovators, or social entrepreneurs) or by consortia of public, private and not-for-profit organizations. As Geoff Mulgan of the Young Foundation has written, “social change depends...on alliances between what could be called the ‘bees’ and the ‘trees’. The *bees* are the small organizations, individuals and groups who have the new ideas, and are mobile, quick and able to cross-pollinate. The *trees* are the big organizations, governments, companies or big NGO s, which are poor at creativity but generally good at implementation, and which have the resilience, roots and scale to make things happen” (Mulgan 2008, 22).

SSH research deepens our understanding of these wicked problems and provides evidence and new knowledge of the actors, drivers, policies, barriers and enablers of wicked problems. But new SSH knowledge that isn’t shared cannot contribute to decisions about

social innovations. This chapter examines how universities can maximize the impact of SSH research for the benefit of society. This chapter examines *knowledge mobilization*.

Knowledge mobilization is the process of connecting academic SSH research (and other knowledge) to non-academic decision makers so that SSH research informs decisions about public policy and professional practice. As we have written (Phipps and Shapson 2009) knowledge mobilization (the process) enables social innovation (the outcome).

Universities are the main producers of new SSH research knowledge and graduate level talent. Both knowledge and talent have the potential to contribute to decisions about social innovations but neither of them can benefit society if SSH scholars limit themselves to traditional academic paradigms of scholarly communication and dissemination. Digital technologies are creating new opportunities for scholars to disseminate and engage their research beyond traditional academic audiences. Lowry and colleagues (Lowry et al. 2011) recently reviewed digital technologies, scholarly communication and knowledge mobilization. They observed that "it is evident, however, that in university engagement efforts—at York University, University of Victoria, and Memorial University of Newfoundland, among others—digital information sources can augment direct social interaction, although these initiatives are only now starting to emerge out of their pilot phases" (Lowry 2011, 58). Recognizing the need to go beyond traditional scholarship and the creation of new knowledge, Tim Brodhead wrote when he was CEO of the McConnell Family Foundation "the greater challenge now is not to generate new ideas *per se* but to create systemic supports for a *continual* process of social innovation in Canada: identifying promising initiatives [and] rigorously testing their efficacy" (Brodhead 2010, 109).

Invigorated engagement of SSH research and connections between the university and society will enable SSH research to have an impact on social innovation by creating a sustainable institutional platform that connects research and expertise beyond the academy for social benefit. Writing in *Canadian Government Executive*, the President of the Social Sciences and Humanities Research Council of Canada, Chad Gaffield, re-imagined campus-community collaborations for social innovation. "An international consensus is now emerging around a people-centered model of innovation for successful change in businesses, government, and communities. ... The new model calls upon us to re-ignite the relationship between knowledge and society; to re-imagine and renew the historic covenant between campuses and the public; and to exploit all the ways of knowing about the past and present to tackle the world's toughest challenges" (Gaffield 2011).

Knowledge mobilization is an emerging institutional research infrastructure that supports these multi-directional connections between academic research and society.

A note on terminology: Many organizations use a diversity of terms to describe what we call knowledge mobilization. There are subtle distinctions between knowledge transfer (KT), knowledge translation (also KT), knowledge exchange (KE), knowledge transfer & exchange (KTE), knowledge translation and transfer (KTT), knowledge mobilization (KMb), and knowledge integration (KI); however, they are all terms to describe essentially the same process of connecting research to practice/policy. Recently an effort to move away from the terminology recommends the term K* (K-star) as a solution to those entrenched in their own identities and resistant to other terms. We prefer to use *Knowledge Mobilization* (KMb). Rather than use this chapter to further the debate, our focus instead will be on our KMb practice. It is this practice that we describe below.

One more definition: decision maker. A decision maker, sometimes referred to as a research user or policy-maker, is a person who uses research to make decisions, frequently about public policy or professional practice. Some models of KMb imagine that researchers and decision makers sit in “two communities” with researchers producing research and decision makers being the receptors for research; however, this model has been shown to be too simplistic as many decision makers also produce research knowledge and all researchers use research to inform decisions about the research process (Davies, Nutley and Walter 2008).

This chapter will review the KMb literature by reviewing three books that provide a more detailed review of the literature than can ever be done in this chapter. Reflecting on our five years of KMb practice, our review of these books draws important observations from each body of work and moves to the conclusion that relationships between researchers and decision makers are key elements to the social process of KMb. This chapter will then review Canadian examples of KMb and will describe efforts underway at universities that are developing an institutional capacity to support KMb. We shall provide detail about the KMb Unit at our institution, York University (Toronto, Canada) and describe how York and KMBing.com: are experimenting with social media tools to support the social process of knowledge mobilization that connects SSH research to social innovations. We shall conclude with thoughts about future directions for both the study and practice of knowledge mobilization.

2. Literature review

Rather than attempting a whole scale review of the literature on diverse terms, structures and efforts underway to connect research to decision makers, we shall review three books published on different aspects of this emerging yet diffuse field:

1. *Knowledge Translation in Health Care: moving from evidence to practice* (Strauss, Tetroe and Graham 2009) presents the Knowledge to Action Cycle that describes how health evidence moves into health practice.
2. *Knowledge Mobilization in the Social Sciences and Humanities: moving from research to action* (Bennet and Bennet 2008) reviews different aspects of how social sciences research can engage with decision makers.
3. *Using Evidence: how research can inform public services* (Nutley, Walter and Davies, 2007) is a detailed and exhaustive review of the literature on research utilization, how research moves into use by practitioners and decision makers for social services and public policies.

These three books were chosen because they provide in depth reviews of the literature in different dimensions of the KMb process in health, social sciences and research utilization respectively.

In their book, *Knowledge Translation in Health Care: moving from evidence to practice*, Strauss, Tetroe and Graham examine the Knowledge to Action (KTA) Cycle in detail. The KTA Cycle is derived from planned action theories. The KTA Cycle provides a framework linking knowledge creation to outcomes and sustained knowledge use. The KTA Cycle, first published by Graham and colleagues in 2006, and reproduced with permission, is shown in Figure 1.

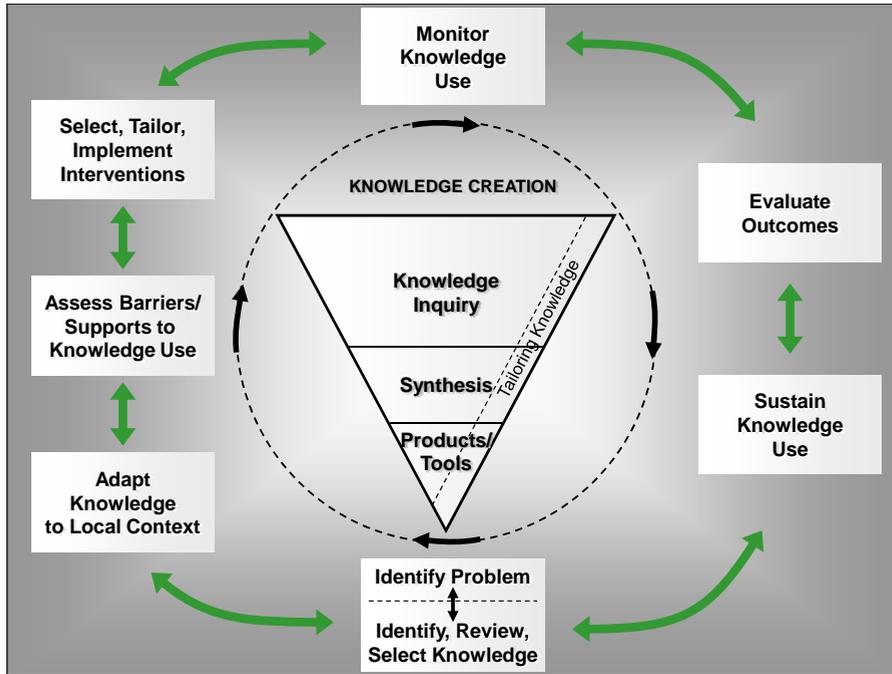


Fig. 1. Knowledge to Action Cycle

The KTA Cycle follows research from knowledge creation to knowledge synthesis (such as systematic reviews) to the production of knowledge products and tools that can be exported out of the knowledge creation space (the funnel at the centre of the model) and into the knowledge utilization space. In the knowledge utilization space (on the outside of the funnel) evidence is adapted, implemented, monitored, evaluated and then its use is sustained. Although presented in a stepwise fashion, the double headed arrows and the cycle around the knowledge “funnel” indicate that this is not intended to imply a linear process. The book dedicates a chapter to each of these steps investigating each in depth. The book provides an excellent review of how evidence derived from health research can be synthesized, packaged and moved into implementation for improved health practices and health policies. Each chapter examining each step in the KTA Cycle considers the barriers and enablers of success. The book is focused on evidence which is its main strength - but also its main limitation. Evidence that has gone through a systematic review resulting in actionable messages is the best evidence to move into implementation (Lavis et al, 2003). Yet by focusing solely on moving existing evidence into practice/policy, Strauss, Tetroe and Graham do not consider the literature that focuses on the relationships by which that evidence is implemented and by which policy makers and practitioners inform knowledge creation. In this book, Michelle Gagnon points out that “involving knowledge users as partners in the research process is a strong predictor that research findings will be used and that the research endeavour will achieve a greater impact” (Gagnon 2009, 240). Clearly in each of the stages described in the KTA Cycle, strong relationships between researchers, practitioners, policy makers and patient advocates will maximize the impact of evidence on policy/practice.

Looking explicitly at knowledge mobilization in the social sciences and humanities, Alex and David Bennet’s book, *Knowledge Mobilization in the Social Sciences and Humanities: moving from research to action*, focuses more on the relationships that underpin KMB rather than the evidence that flows as a result of those relationships. They indicate this is especially important for tacit knowledge (Bennet and Bennet 2007, 95). They describe KMB as “collaborative entanglement.” “Collaborative entanglement means to purposely and consistently develop and support approaches and processes that combine the sources of knowledge and the beneficiaries of that knowledge to interactively move toward a common direction such as meeting an identified community need” (Bennet and Bennet 2007, 48). This description evokes the messy (“entanglement”) yet social (“collaborative”) nature of the relationships that are inherent in KMB processes. Bennet and Bennet also consider KMB as a program which is a distinction from much of the literature that looks at individual KMB interventions. When considering systematic supports for social innovation a systems or programmatic approach is required (Brodhead 2010).

The authors present a complex model of KMB, shown in Figure 2, reproduced with permission.

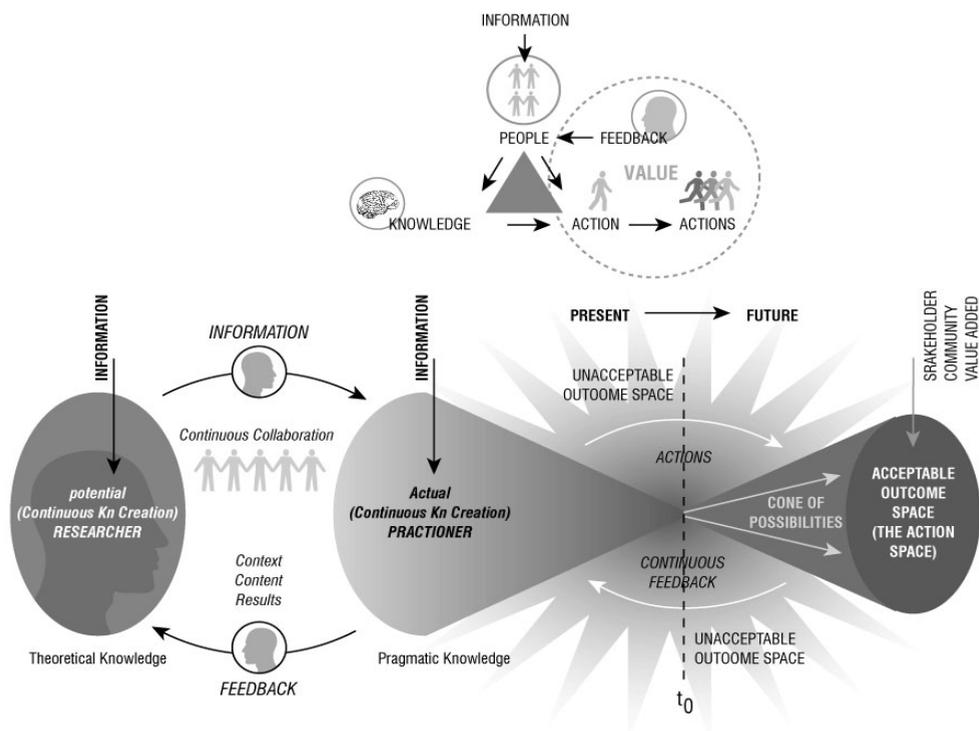


Fig. 2. Knowledge Mobilization – assimilating and applying the right knowledge to solve problems, make decisions and take effective actions.

The main challenge with this model is its complexity and the fact that the arrows are *unidirectional*, although the diagram’s intent as described in the text of the book is to

illustrate a *multidirectional* flow of knowledge. That is not to say that KMB is not complex and multidirectional - it is. But complex models do not aid in understanding.

The main strength of this model is that it moves beyond the transmission/translation of evidence in the Knowledge to Action cycle. Bennet and Bennet describe a process of knowledge flows, and their diagrams support this with pictures of flows between researchers and decision makers. The flows are sometimes mediated by social media. Social media can "enable information and knowledge sharing among stakeholders. These tools can contribute to the development of trust and respect among stakeholders by supporting the creation or expansion of communities of interest, learning, and practice." (Bennet and Bennet 2008, 85)

Knowledge brokers (Lomas 2007; Ward, House and Hamer 2009) also play a role in "both connecting and translating knowledge to end users (Bennet and Bennet 2008, 123). A flow of knowledge, whether supported by knowledge brokers, social media or both, builds on the Knowledge to Action model by focusing on relationships between researchers and decision makers. It is this focus that differentiates Bennet & Bennet from the Knowledge to Action model. As Bennet and Bennet indicate (Bennet and Bennet 2008, 124), "it is through the interaction of all these relationships and activities and the sharing of understanding that desired change emerges."

Sandra Nutley and her colleagues (Nutley, Walter and Davies 2007), from the Research Unit for Research Utilization (<http://www.ruru.ac.uk/>) at the University of Edinburgh, published *Using Evidence: how research can inform public services* - a seminal review of the literature on research utilization. Nutley and colleagues review research utilization studies that show how research is used to inform public policy and professional practice. There is no "Nutley model" of research utilization. Rather the book focuses, in part, on the social nature of research utilization.

Nutley agrees with Bennet and Bennet by recognizing that research utilization is socially and organizationally situated and is an interactive process. Because it is a social process, interactive forms of engagement between researchers and decision makers should be encouraged. "Interpersonal and social interactions are often key to the use of research, whether among policy and practice colleagues, or more directly with researchers themselves" (Nutley, Walter and Davies 2007, 302). Nutley and colleagues identify that "the need for better links between researchers and potential research users is addressed through interactive strategies, by developing informal networks or more formal partnership arrangements" (Nutley, Walter and Davies 2007, 151). They conclude that "interactive approaches currently seem to show most promise in improving the use of research. Interactive strategies may range from simply enabling greater discussion of findings by policy makers and practitioners at presentations, through local collaborations between researchers and research users to test out the findings from research, to formal, ongoing, large-scale partnerships that support better connections between research, policy and practice over the longer term" (Nutley, Walter and Davies 2007, 152).

Much scholarship of research use has focused on relationships between individuals; however, those individuals sit within organizations. Creating a culture of research use within organizations (both research and policy/practice organizations) can help support the collective and embedded nature of the links between research and decision making. Although this might be true, Nutley and colleagues recognize that "the evidence that we

have about developing effective organisational – and system – level research use strategies, while emerging, is still fairly thin on the ground” (Nutley, Walter and Davies 2007, 307). In 2012, Nutley and her colleague Sarah Morton state that systems models of research use are the future (Morton and Nutley 2011).

Sandra Nutley’s work builds on that of Bennet and Bennet by considering not only relationships between researchers and decision makers but also the specific focus on the *social nature* of these relationships and the *interactive approaches* that can best enhance research use. Key also to current efforts to enhance research use and KMb is the role played by organizations.

Finally, whether working at the level of the individual or the organization, whether working to enhance the uptake of evidence or create interactive strategies to support enhanced research use, these activities happen *within* and *between* different sectors. As shown in Figure 3, KMb occurs within and between sectors resulting in social benefit. Viewed holistically, KMb can be considered an *ecosystem*. “Knowledge Mobilization is the overall flow and ongoing and constant input and development of knowledge. It is the open *process* of putting available knowledge into active service to benefit not just one particular corporate or organizational structure, but for the greater benefit of all in society” (Myers, 2010).

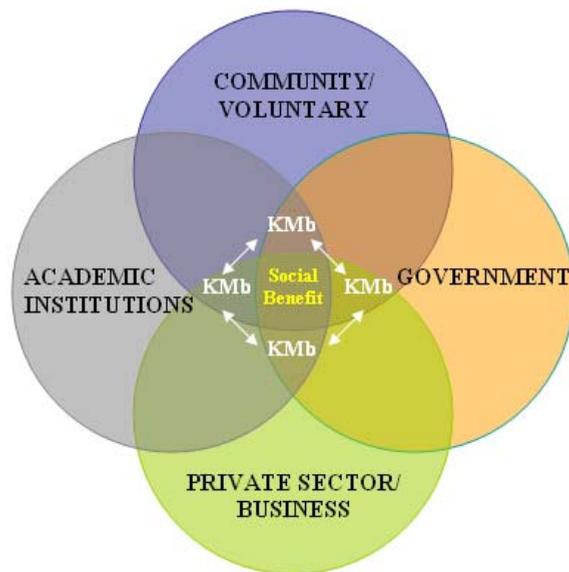


Fig. 3. KMb happens between and among sectors for social benefit.

All the KMb associated activities in the Knowledge to Action cycle, those reviewed by Bennet and Bennet and by Sandra Nutley and her colleagues occur in the arrows in figure 3. Most flow diagrams focus on the activities that occur in the boxes at the beginning and the end of the arrows. It is these boxes that are the focus of *Knowledge Translation in Health Care: moving from evidence to practice* (Strauss, Tetroe and Graham, 2009). This book deepens our understanding of each step in the Knowledge to Action cycle, but Andrew Campbell and Nick Schofield (Campbell and Schofield 2008) remind us to also focus on the flows between

the boxes. Recognizing that “diagrams of organizations and other systems usually attach the dollars to the boxes and not to the arrows between them”, the authors recommend that funders also “fund the arrows” (Campbell and Schofield 2008).

Key Messages:

- KMb is a social process
- Efforts to enhance KMb need to be interactive and focus on the relationships between researchers and decision makers
- KMb happens at the level of the individual and is only beginning to emerge at the organization and the system/sectoral level

3. KMb as an institutional capacity

Having reviewed the KMb literature in the previous section we now illustrate the key messages using live case studies of Canadian organizations that have developed a capacity for KMb. Canada is seen as an international leader in KMb; however, there is an evidence gap since this international perception has never been empirically proven (Linder, Sudsawad and Phipps 2011). Nonetheless, Canada has created many public organizations that maximize the public benefit from public investments in research. Canada has created national institutions with a KMb mandate including the *Canadian Institutes of Health Research* (<http://www.cihr-irsc.gc.ca/>), *Canadian Health Services Research Foundation* (<http://www.chsrf.ca/Home.aspx>), *Canadian Partnerships Against Cancer* (<http://www.partnershipagaincancer.ca/>), *Mental Health Commission of Canada* (<http://www.mentalhealthcommission.ca/english/pages/default.aspx>), and the *Canadian Council on Learning* (<http://www.ccl-cca.ca/CCL/Home/index.html>). While not an organization of the federal government, Canada also has *ResearchImpact-RéseauImpactRecherche* (<http://www.researchimpact.ca/home/>), a national network of university knowledge mobilization units. As a result of this effort to embed KMb within the Canadian research fabric a number of organizations have developed a KMb mandate to complement their research mandate.

The *Institute for Work and Health* (IWH) is an independent not-for-profit research organization in Toronto, Canada. IWH is one of the top five occupational health and safety research centres in the world. It has a mandate to undertake research in the prevention of work-related injury and illness and on treatment, return to work, disability prevention and management, and compensation policies for injured workers. IWH also has an active knowledge transfer and exchange unit that brokers relationships while making research accessible to policy makers and other work and health stakeholders. According to the IWH website (<http://www.iwh.on.ca/knowledge-transfer-exchange>) which uses KTE synonymously for KMb - “KTE is the process of sharing timely, useful evidence-based research findings with decision makers and others who use research. KTE also involves actively engaging external audiences in research to make studies more relevant” (Institute for Work and Health 2011). IWH produces a number of products including research articles, reports and working papers, but they also produce policy briefs and research summaries such as *Sharing Best Evidence* (Institute for Work and Health 2011) and *Research Highlights* (Institute for Work and Health 2011).

More importantly, because the literature above illustrates that KMb is a social process based on interactive relationships, the KTE team at IWH supports a variety of networks and

events. Guided by a Health & Safety Association Liaison Committee, IWH has established a variety of clinical networks and relationships with different occupational health and safety stakeholders - including labour, advocates and policy makers. "John Frank, director of the Scottish Collaboration for Public Health Research and Policy and founding director of research at IWH, sums up Gibson's contribution: 'Jane [Gibson, Director, Knowledge Transfer & Exchange, IWH] has created at IWH perhaps the most effective and polished KTE unit in any research facility in North America. She has been able to forge exceptional links to IWH's diverse and dispersed stakeholder communities, and provide them with a steady flow of easily digestible research findings. Indeed, her IWH unit's novel conceptualization and actualization of KTE has led the field internationally (Institute for Work and Health 2011).'" IWH has embedded Kmb at the organizational level, creating a system of Kmb that supports institutional relationships between research and decision makers.

Another Canadian example of Kmb embedded within a research-based organization is PREVNet: *Promoting Relationships and Eliminating Violence Network*, funded by the *Networks of Centres of Excellence* (NCE). According to the PREVNet website (<http://prevnet.ca/>) "PREVNet is a national network of Canadian researchers, national non-governmental organizations (NGOs), corporations, and governments committed to stop bullying and promoting healthy relationships for children and youth. Bullying is wrong and hurtful. Every child and youth has the right to be safe and free from involvement in bullying. It affects children and youth who are bullied, those who bully others, and those who know it is going on". PREVNet produces a number of knowledge products including videos and fact sheets (presented online and in downloadable formats) while also supporting the social side of knowledge mobilization by hosting a number of interactive exchange events.

PREVNet has recently been awarded an NCE Knowledge Mobilization (NCE-KM) New Initiative award to co-create 10 sustainable knowledge mobilization (shown here as KM) projects. The goal for this NCE-KM is to provide adults and youth with evidence-based knowledge, strategies, tools, and programs to prevent violence and promote healthy relationships. For adults to be effective in preventing violence, they require evidence-based knowledge about: healthy and unhealthy development and relationships, how development varies by age and gender, how to identify risks for violence, and what to do to support children who are developing behaviours that may lead to violence. Peers also require this knowledge for their own healthy development and to support friends.

PREVNet joins 58 researchers and 56 graduate students with 50 national NGOs, corporations, and government agencies. Through working groups, the expertise of NGOs, government ministries and diverse fields of research expertise are integrated and linked in comprehensive knowledge mobilization. Researchers collaborate with partners to exchange and translate knowledge to develop education, assessment, intervention and policy related to bullying. PREVNet is working for socio-cultural change in Canada regarding power and aggression in relationships by providing NGOs and governments with the capacity to adapt and disseminate specific scientific knowledge and technology to build awareness, change attitudes, assess the extent of bullying and victimization problems, implement evidence based strategies and develop policies that support these activities. Through these partnerships, the outcomes of improved understanding and practice will enhance social capital, promote mental and physical health, promote healthy relationships, school engagement and prevent crime.

Although PREVNet is producing a wide range of knowledge products - including training manuals, reference guides, public service announcements and research communiqués - the focus of PREVNet is on relationships, collaborations and networking. The products produced arise from the research and knowledge exchange activities of the individuals and organizations in the network. PREVNet illustrates the social nature of KMB by using interactive methods to produce a system of knowledge mobilization to enhance the practices of all those involved with children and youth to promote their healthy development through healthy relationships.

Both IWH and PREVNet are organizations designed around a KMB mandate for a specific topic, workplace health & safety and healthy relationships respectively. Some universities are beginning to invest in an institutional KMB capacity similar to the ubiquitous technology transfer and industry liaison services (Agrawal 2001) - although this is an emerging expertise and there are relatively few examples of universities that have invested in KMB and related support services. Three examples (from England, Scotland and USA) illustrate the varied forms in which universities have invested in an institutional capacity to connect research to policy and/or practice.

Starting with a grant from the Atlantic Philanthropies in 2003, the *Community University Partnership Program* (Cupp) now receives core funding from the University of Brighton. Cupp fosters relationships that allow academic expertise (faculty and students) to work with community opportunities. Cupp operates a *research helpdesk* (Rodriguez and Millican 2008) that community organisations can call to get connected to academic researchers, community-university research forums and “speed dating” all designed to make community-university connections around issues of importance to local communities (Hart and Wolff 2006). Cupp is one way that the University of Brighton is delivering on its aim of Corporate and Civic Engagement as articulated in its *Corporate Plan* (<http://staffcentral.brighton.ac.uk/xpedio/groups/Public/documents/staffcentral/doc007325.pdf>).

Built on a *community of practice* model (Hart and Wolff 2006), Cupp embeds knowledge exchange within all of its activities. Cupp does not prioritize the production of knowledge products to transfer the results of university research but mainly seeks to create opportunities for researchers and community partners to develop relationships that will meet the needs of both *community* and *university* partners. Knowledge exchange tools used by Cupp include *The Brighton and Sussex Community Knowledge Exchange* (Hart, Maddison and Wolff 2007) and *On Our Doorstep* programs. Both of these programs create spaces where university faculty and students can meet potential partners from local community organizations and explore relationships for mutual benefit. Cupp brokers these relationships and supports community-university collaborations that emerge from conversations started through knowledge exchange. Cupp embodies the three key lessons learned from the literature showing that knowledge mobilization is a social process supported by interactive relationship building strategies and practiced at an institutional level.

The *Centre for Research on Families and Relationships* (CRFR) (<http://www.crfr.ac.uk/>) is based at the University of Edinburgh and has partners across other Scottish universities. “The mission of CRFR from its inception has been to make research accessible to a range of audiences and to work in partnership with policy-makers and practitioners to ensure that

research is relevant and useful to policy and practice communities in Scotland, the UK and beyond" (Morton and Nutley, 2011). CRFR has strong collaborations with the *Research Unit for Research Utilisation* (<http://www.ruru.ac.uk/>) at the University of Edinburgh and grounds much of its effort in the foundational work of Sandra Nutley and colleagues (Nutley, Walter and Davies 2007). Since 2001, CRFR has sought to achieve its mission by undertaking project or contract work on behalf of decision makers, making research products available in formats that are accessible to a non-academic audience and brokering relationships between university researchers and decision makers.

As Morton and Nutley (2011) describe, "the provision of support for research use is important both in academic and in policy and practice settings. One of the key differences between working in research centres with a commitment to knowledge exchange and working in standard academic departments is often the level of knowledge exchange support available. If knowledge exchange is not costed into research funding applications, and is not supported by university practices it will be hard for individual researchers to carry out the activities necessary to increase the impact of their work.". CRFR is a university-based KMb service that provides the support necessary to maximize the impact of research on non-academic audiences. Like Cupp, CRFR supports the social aspects of knowledge mobilization by fostering relationships between researchers and decision makers. Although the centre is discipline specific, CRFR serves the needs of a number of academic institutions.

The Institute for Health Policy at the University of Texas School of Public Health has also started a project designed to connect research to policy. The first incarnation of *Research Into Action* is focused on connecting public health researchers and policy makers/practitioners, but there is also a desire to grow to serve needs more broadly at the university. According to their website (https://ktexchange.sph.uth.tmc.edu/research_into_action.aspx), "*Research Into Action* (RIA) is a knowledge translation initiative that was founded in 2007 with a generous award from the ExxonMobil Foundation, with the aim of developing new methods of assisting researchers throughout the University of Texas Health Science Center in translating their technical findings into usable advice and practical recommendations".

The RIA team approaches *knowledge translation* (their term for KMb) in three ways: 1) through translation activities undertaking contracted research in collaboration with public health agencies; 2) through a web portal and social media strategy and 3) disseminating key findings to public health stakeholders. RIA produces knowledge products such as briefing packages and FAQ sheets for alcohol and substance abuse screening and referral, as well as a research synthesis on noise pollution - among other projects. Their online portal boasts over 600 members, has a variety of blog posts and pod casts, including an online discussion board. It is this latter feature of social media that allows RIA to complement its knowledge products with interactive engagement of stakeholders.

Cupp, CRFR and RIA use different strategies to support different levels of engagement between researchers and decision makers. All three have professional staff supporting KMb activities of their institution. Cupp is almost exclusively based on an exchange model creating spaces and opportunities for the community and university to interact. CRFR produces products for policy makers and practitioners but they also rely on events and networks where their work can inform policy and practice. RIA relies more heavily on

contracted collaborative research and the production of knowledge products to translate research into policy and practice settings, but RIA complements these with a strong online and social media engagement strategy. Cupp, CRFR and RIA illustrate how KMb services are social processes supported by interactive (in person or online) relationships between researchers and decision makers.

All three are working beyond the level of a single project and embedding the activity within institutional structures and systems. As mentioned above, Nutley, Walter and Davies recognize that “the evidence that we have about developing effective organisational – and system – level research use strategies, while emerging, is still fairly thin on the ground” (Nutley, Walter and Davies 2007, 307). Only Cupp serves the need of the entire university. In order to better understand the potential for university wide KMb we examine in detail York University’s KMb Unit.

Key Messages:

- Institutional KMb support services require a variety of strategies to support the diverse KMb needs of stakeholders
- KMb often occurs at the level of a research project or research unit; however, some institutions are beginning to invest in organizational and systems level KMb services
- KMb creates value for the institution as well as for researchers and their decision maker partners.

4. KMb at York University

York University was the first university in Canada to develop a KMb Unit that is fully integrated into the university’s research enterprise. York’s KMb Unit delivers KMb services to faculty and students and to decision makers in local community organizations and (mainly municipal, regional and provincial) government agencies. Most of York’s KMb services are social in nature and depend on interactive strategies to broker relationships between researchers and research users. York’s KMb strategy and processes have recently been explained in detail (Phipps 2011).

As shown in Table 1, York’s KMb Unit practices elements of producer push, user pull, knowledge exchange (Lavis, Ross, McLeod and Gildner 2003) and co-production (Hart, Maddison and Wolff 2008). Arising from each of these methods is a KMb service. While each service might be employed to address a specific opportunity or need, they all work in concert to support the development of collaborations between researchers and decision makers.

ResearchSnapshot clear language research summaries (KMb service #1) are a form of producer push knowledge transfer in which the KMb Unit writes a two page summary of peer reviewed journals and edited book chapters according to clear language writing and design principles. The KMb Unit uses these as calling cards to facilitate introductions between researchers and decision makers - making these a tool to support the social and interactive nature of KMb; however, they are also used in a non-iterative fashion to transfer the results of research to decision makers. Every other KMb service above is based on interactive methods that support personal relationships between researchers and decision makers.

All of York’s Kmb services are detailed elsewhere (Phipps 2011). We shall focus some detail here on the core of the Kmb Unit - *the knowledge broker*. The knowledge broker operates a research translation help desk (Rodriguez and Millican 2008). The knowledge broker is the first point of contact for researchers and decision makers seeking to connect with one another. The knowledge broker meets (in person or on the telephone) with the requester, clarifies the inquiry, translates the request into either a research or a policy/practice opportunity and then seeks candidates who might be interested in the collaboration. The broker makes an introduction between the researcher (or decision maker) and the potential decision maker (or researcher) collaborator. The knowledge broker also supports the emerging conversations as the parties explore collaboration. The broker does not become directly involved in the research.

KMb Method	KMb Service	Notes
Producer Push	#1 Clear language research summaries	Develop clear language research summaries from completed faculty research. York has over 170 <i>ResearchSnapshot</i> clear language research summaries posted in a searchable online database www.researchimpact.ca/researchsearch
	#2 Lunch and Learn	Seminar series at decision-maker sites
User Pull	#3 Research translation help desk	Use knowledge broker model to help decision-maker partners identify, develop, and sustain collaborations with researchers.
Knowledge Exchange	#4 Research forums	KM in the AM: Monthly thematic knowledge mobilization breakfasts.
Co-production	#5 Social media to support collaboration	Provide support for full suite of social media tools including blogging, delicious bookmarks, Twitter, and social collaboration tools.
	#6 Kmb interns	Graduate student Kmb interns work in research collaborations with decision-maker partners.

Table 1. York University’s Suite of Kmb Services

This last point differentiates York’s Kmb service from RIA and CRFR. The knowledge brokers at RIA and CRFR are themselves researchers and undertake research projects on behalf of decision makers. The knowledge brokers at York’s Kmb Unit do not get involved in the research project. As a project arises from a brokered collaboration the knowledge broker will monitor and be available to support any concerns arising. The knowledge broker will also follow up during and after the project to identify any outputs or outcomes of the collaboration - but the knowledge broker is not part of the research team.

A research translation help desk staffed by a knowledge broker makes research and research expertise accessible to non-academic research stakeholders by supporting interactive, social relationships between decision makers and researchers. As the foundation of the Kmb Unit, the research translation help desk is the first service that should be established as part of an institutional capacity to support Kmb.

It is also the job of the knowledge broker to match the KMb services provided with the KMb opportunity at hand. Phipps explains that “developing a KMb strategy for any particular research collaboration may employ one or more of these KMb services. The knowledge broker chooses the right KMb service(s) according to the available research, the researcher(s), the decision-maker(s), and the context of the potential collaboration (available resources, regulatory environment, political context, time pressure, etc.)” (Phipps 2011). In some cases multiple KMb services might need to be applied to individual opportunities. This is supported by a recent systematic review that demonstrated that multifaceted approaches to the implementation of research into practice were superior to those employing individual methods (Boaz, Baeza and Fraser 2011).

After more than five years of operating an institutional KMb service, what does success look like? As described by Phipps, “developing and using these six KMb services has created value for faculty, graduate students, and decision-maker partners as well as the university itself. In addition to the KMb services identified above, the KMb Unit has been part of the grant application team that supports all large-scale policy and practice-relevant research grant applications. Engaging the KMb Unit as part of the grant application team ensures that grant applications are submitted with a well-crafted and justified knowledge mobilization strategy, something that is becoming increasingly required by granting agencies. These large-scale grants have attracted over \$16 million in external research support for York University researchers. In addition, the KMb Unit has attracted over \$1 million in research funding from decision-maker partners to support research collaborations. York’s KMb activities have also helped partner-organizations raise over \$800,000 in support of their services” (Phipps 2011). The activities of the KMb Unit are summarized in Table 2.

# Faculty Involved	228
# Graduate Involved	141
# Information sessions for faculty and students	165
# Information sessions for community	184
# collaborations brokered	227
# agencies involved in KMb partnerships	205
Community Partner funding raised	\$810K
Research Contract funding raised	\$1.2M
Total KMb associated grant funding raised	\$16M
# web hits	+4M
# Research Summaries	158
# tweets	4253
#Twitter followers	1529
# delicious bookmarks	219
# blog postings (+71,000 views)	266

Table 2. York’s KMb Activities February 2006-August 2011

These numbers tell only part of the story. Most of these numbers are input metrics for KMb and do not present the outcomes or impact of this work. Some outcomes are seen in the short

term. Of the +35 graduate student interns who have worked with community or government partners in projects brokered by the KMb Unit, eight have been hired by their internship partner. This is an immediate outcome with a significant impact on the graduate student who is now working in a chosen field of study. It also has an impact on the internship partner who now has increased their capacity to engage in research and also has an appreciation of the role that university research can play in their organization (Hynie, Jensen, Johnny, Wedlock and Phipps 2011). In contrast to the short term impact of a KMb intern hired by a partner, most impacts occur over the span of years. It is these stories that tell the impact that numbers do not. We illustrate this impact with four stories from our work.

4.1 Evaluation of the Inclusivity Action Plan (public sector partner)

York Region is home to the largest newcomer population in Canada. In January 2005 York Region held an Inclusivity Summit that resulted in York Region Council adopting an Inclusivity Action Plan that included opening a Welcome Centre where newcomers could get access to culturally sensitive health and human services. In 2007, York's KMb Unit brokered a collaboration between the Regional Municipality of York and York University researchers from the Faculty of Health to undertake an evaluation of the Welcome Centre. The evidence co-produced in that evaluation informed a decision by the Regional government to expand the program. York Region now has five Welcome Centres and newcomers across this large region have greater access to many settlement services - including the culturally sensitive health and employment services they require. In this expansion 86 jobs were created and over 48,000 instances of service delivery have been performed between 2007 and 2011. The researchers published their results in an international journal (Singh and Hynie 2008) and you can read the *ResearchSnapshot* clear language research summary (http://researchimpact.ca/_app/impact/files/tables/files.path.22.pdf) about this research and its policy implications.

4.2 Green Economy Centre (private sector partner)

Nottawasaga Futures is a non-profit community futures agency in rural South Simcoe that supports rural businesses. Nottawasaga Futures approached York's KMb Unit in 2009 to assist them with the challenge of helping rural businesses make greener business decisions. York's KMb Unit held a meeting of faculty, funders and Nottawasaga Futures to imagine how green business services could be delivered in South Simcoe. Nottawasaga Futures engaged the services of two graduate student KMb interns who were supervised by faculty members from York University's Schulich School of Business and the Faculty of Environmental Studies. The interns undertook research that informed the development of a business case that subsequently was funded and launched the Green Economy Centre. The Green Economy Centre is an innovative research and education program that initiates, supports and facilitates green economic best practices, ensuring that the rural South Simcoe economy is healthy and sustainable. The Centre was launched in April 2010 and received funding in summer 2010. Since then, the Centre has contacted 604 local businesses and made 507 individual visits resulting in 39% of companies expressing interest in the Centre's programs. With the support of the Centre, four companies have received loans for green projects totaling more than \$1 million, and seven other loans are pending. The services of the Green Economy Centre have already created 18 jobs while

maintaining 221 jobs. This project is illustrated in a short KMb video (http://www.youtube.com/researchimpact#p/a/u/0/J15_IBz5mYU).

4.3 Heat Registry (community partner)

In North America heat kills more people every year than all severe weather related event combined. In 2008, Tanya Gulliver was a graduate student in York's Faculty of Environmental Studies. She was awarded a York University KMb Internship to work for the summer with her partner, Parkdale Activity and Recreation Centre (PARC), a community centre providing support to a large and diverse group of psychiatric survivors, low income and marginalized persons. PARC and Tanya developed Canada's first heat registry that tracked vulnerable community members at risk of heat exposure. During heat alert days the heat registry was used by Tanya and a group of street engaged volunteers to track vulnerable community members and ensure that they received the services they needed to resist the heat. In 2010, Tanya developed a Heat Registry Manual. "This manual offers a way to track (through regularly updated documentation) and actively monitor people who might be at risk from suffering ill effects caused by extreme heat. It provides a system of checking in on, and checking up on (through outreach or some other effort), people who have voluntarily self-identified as being at risk and want to be on the Registry" (Toronto Disaster Relief Committee 2011). The Heat Registry Manual is now before the Toronto Board of Public Health and is being evaluated by Toronto's Medical Officer of Health to determine how it might be able to inform Toronto's cooling policies and services.

4.4 Strength Investments (community sector partner)

For five years The United Way of York Region (UWYR) and York University have been deepening their knowledge mobilization and social innovation partnership. Recently York and UWYR co-invested in three graduate student interns who undertook social asset mapping research in Markham, a suburban municipality in York Region. Their research developed the evidence needed to launch a wholly new form of United Way investment called Strength Investments that recently invested \$150K in six projects. As an example, UWYR invested in a project from the Markham African Caribbean Association titled *Building Sustainable Capacities amongst Afro-Canadian Caribbean Youth in York Region*. This initiative involves and listens to local youth as they identify their realities in York Region - inclusion, education, family life - and then helps them identify and build their own solutions. Strength Investments and therefore this project would not have been possible without the collaboration between a UWYR opportunity and York research.

Three lessons can be learned from these stories: 1) *KMb initiatives take time to develop*. Impact is rarely measured in the short term. As you plan your institutional KMb services, be prepared to invest for the long haul (4-5 years) before expecting to see impacts of your work; 2) *KMb is a process that results in social innovations*. Strength Investments, Heat Registry, Welcome Centres and the Green Economy Centre are social innovations that were enabled by KMb. KMb is not an end in itself. KMb is the process of brokering relationships between researchers and decision makers. The outcomes of those collaborations are social innovations; 3) *Students are more frequently the source of research leading to social innovations than are faculty members*.

Key to the success of York's KMb Unit is its partnership with the United Way of York Region (Phipps, Zanotti and Johnny 2009; Phipps and Zanotti 2011). Established in 1976, United Way of York Region (UWYR) is a registered charity uniting people and resources to improve our communities. In its 2010 fundraising campaign, UWYR raised \$8.1M to support human services provided by its 39 member agencies delivering 100 programs. UWYR also funds coalitions of residents and organizations. United Way identifies community priorities and works with partners to take action, supporting a network of 100 critical programs across the region's nine municipalities. More than just a funder of agencies and coalitions, UWYR is a community champion and strong advocate for the community sector. UWYR allows York's KMb services to be grounded in the perspectives of the community. This collaboration is a result of and reinforces the trust between the community and the University and creates an institutional relationship that transcends individuals.

Key Messages for those seeking to develop an institutional capacity for KMb:

- Collect data: Count everything (see Table 2) and track initiatives longitudinally to identify those social innovations that will become your success stories.
- The first action you should take is to hire the right knowledge broker as the core of your KMb Unit.
- Develop a suite of KMb tools and select the right tool(s) for the right opportunity.
- Develop institutional relationships between the university and non-academic partners.

5. Social media as an emerging tool for knowledge mobilization

Social media support is one of the KMb services offered by York's KMb Unit (Table 1). Social media are increasingly being used in the academy both as a teaching tool and as a research dissemination tool. Although formal research on social media is only beginning to emerge there is evidence that social media enhances transparency and trust, while supporting a variety of relationships. As a result, social media has the potential to support knowledge mobilization and research-based relationships. York is very active in social media to support an emerging KMb community of practice and we are using social media tools to support co-creation of research and knowledge; however, this experience is only now beginning to be formally evaluated - so this section will be a visioning section.

5.1 Literature review of social media and KMb

Much of the literature exploring the use of social media comes from the business sector and is primarily concerned with the use of social media for marketing and sales purposes. Research of this type looks mainly at social media as a way to reach consumers (Kaplan and Haenlein 2010), or else focuses on issues of Return on Investment (ROI) and justifications for using social media (Fisher 2009). Due to the low or no cost of social media tools, the not-for-profit and charity sectors have also been quick to use these tools to engage potential volunteers and donors (Mattson and Barnes 2010). Researchers in computer science and computer mediated communication areas are also interested in social media; however, this research is mainly interested in examining these tools from an analytic, measurement or operational perspective (Finin, et al. 2007; Weng, et al. 2010).

Boyd and Ellison's survey of scholarship on social media found that "research has focused on impression management and friendship performance, networks and network structure,

online/offline connections, and privacy issues” (Boyd and Ellison 2007, 9). However, research and the literature illustrating the utility of social media in the social sciences for knowledge mobilization was lacking from this list.

Research on the social media tool Twitter is also emerging and studies have been conducted to understand who is using the tool and how they are using it (Java et al. 2007; Honeycutt and Herring 2009), as well as how networks are formed through Twitter friends and followers (Huberman, Romero and Wu 2008). However, these studies are more focused on how people are using Twitter from an operational point of view and have not begun to provide insights into how people are using Twitter to establish relationships and/or communities of practice. They also do not look specifically at research communities.

More useful to our discussion of social media for knowledge mobilization is research that explores the establishment of virtual communities of practice (Sangwan, Guan and Siguaw 2009; Urquhart, et al. 2010; Michaelides, Tickle and Morton 2010) and more general discussions of knowledge transfer and sharing (Tortoriello, Reagans and McEvily 2011). These articles discuss the elements necessary for successful online community development and knowledge mobilization.

As the use of social media for knowledge mobilization is an emerging field of study, there are many opportunities for researchers to examine how these tools are currently being used to disseminate social science research, engage between researchers and decision makers and how the use of these tools might evolve in the future.

5.2 How York’s KMB Unit is using social media

York’s KMB Unit has been using social media tools since May 2008 when we launched our Wordpress blog *Mobilize This!* (<http://researchimpact.wordpress.com>). In 2009, we started micro-blogging using Twitter (<http://twitter.com/researchimpact>; @researchimpact) and using an online collaborative platform called O3 (<http://researchimpact.othree.ca>), which is available free of charge to all researchers in the province of Ontario through the *Ontario Research and Innovation Optical Network (ORION)*.

We now have a suite of social media tools that we use for various purposes, as shown below in Table 3:

	Storytelling	Resource Sharing	Disseminating Research	Networking
Blogging	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Twitter	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
O3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Delicious		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
LinkedIn				<input checked="" type="checkbox"/>
Flickr	<input checked="" type="checkbox"/>			
YouTube	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Facebook*	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Table 3. Using Social Media Tools for Knowledge Mobilization

We do not currently use facebook as our community is more active on Twitter but Facebook has the potential to be a useful tool, especially for engaging students.

Blogging: York's KMb blog, *Mobilize This!*, provides an opportunity for us to share news about our activities; promote upcoming events; highlight past events; allow readers to get to know our team through *Meet a Mobilizer* posts; share reviews of books and articles we are reading; and offer editorial comments on issues important to knowledge mobilization. Readers can follow our blog posts through the use of an RSS aggregator or by signing up to receive new posts via email, and they can comment on our posts which enables community engagement.

Twitter: Twitter allows us to send 140 character long updates called tweets to our followers, who are people who have voluntarily elected to receive our tweets. As of October 17, 2011, we have 1,631 followers and we follow 326 other people's tweets. We use Twitter to update our followers on our activities, share resources we find useful, connect to people who share our interest in knowledge mobilization, and in 2010, we also started tweeting daily about our *ResearchSnapshot* series of clear language research summaries. Every day, we send out a tweet with the title and link to one of our over 170 *ResearchSnapshot* summaries; for example, on October 17, 2011 we tweeted, "Today's ResearchSnapshot: Research summaries improve access and utility of academic #research." The use of Twitter in this way increased web traffic to the searchable online database of *ResearchSnapshot* (www.researchimpact.ca/researchsearch) 270% (York University, KMb Unit, unpublished data).

O3: This online collaborative platform contains a suite of social media tools, including a document repository, wikis, forum discussion lists, blogging features, an event calendar, member profiles and picture galleries. It also supports the importing of RSS feeds and other social media applications for further customization.

The York KMb Unit uses O3 for our own activities but also supports the use of O3 for other knowledge mobilization research projects conducted by York researchers and their community partners. One example of this is the use of O3 in Project Teen Mom, a collaborative research project focused on teen mothering that involved researchers and graduate students from York University's *LaMarsh Centre for Research on Violence and Conflict Resolution*, along with practitioners from two service agencies in York Region - *Kinark Child and Family Services* and the *York Region Children's Aid Society*. Using O3 gave practitioners access to research relevant to serving teen mothers and provided insights into what some of the pressing research needs were in the community to the researchers and students. You can watch a video featuring some of the participants in the project talking about their experiences using O3 to network and share knowledge (<http://www.youtube.com/researchimpact#p/u/3/qwldIEBaPWY>).

5.3 Twitter profiles keyword study

The KMb Unit's use of Twitter provides an open network (while you can block a follower you don't need to approve a follower) with the resulting increased availability of user profiles. In order to gain more understanding of how knowledge brokers can use Twitter, a pilot project was undertaken by York's KMb Unit to advance our understanding of how individuals might use Twitter to connect and form relationships. Analysis of what



Fig. 4B. Word cloud of words used in Twitter profiles of those followed by ResearchImpact (n=99)



Fig. 4C. Word cloud of words used in Twitter profiles of the Control Group (n=145)

Keywords were selected from ResearchImpact’s website (<http://www.researchimpact.ca>) by considering relevant words connected to the work of our KMb practice. A brainstorming session with staff and students (n=7) of the KMb Unit created a list of 16 keywords encompassing those words considered most relevant to our KMb practice. Each member of the KMb Unit then ranked their top ten keywords scoring each from 10 (top ranked) to 1 (bottom ranked). The ranked scores of each word were summed to develop a total weighted score for each word. As examples, the word “knowledge” received the highest score total of 60. The word “community” scored a total of 31 and web (using the words website, Internet

as synonyms) received the lowest score total of 1. The ResearchImpact profile with keyword scores is “Research (score 60) Impact (score 10) is Canada's knowledge (score 60) mobilization (score 49) network, connecting university (score 11), community (score 31) and government researchers (score 43) for social (score 26) innovation (score 29)” for a total score of 259. The scores in the RIF and FRI groups range from 0 to 194.

The keyword scores of the profiles of all 99 RIF and 345 FRI and 145 CG were averaged and means plus Standard Deviation (S.D.) compared using a two tailed t test for independent variables to test for significant differences. The results are presented in Table 4.

	n	range	Mean	S.D.	p value	
FRI	345	0-194	17.8	33.084	FRI	RIF
RIF	99	0-194	38.69	45.601	6.29E-07	
CG	145	0-74	4.31	13.92	2.89E-06	1.7E-15

Table 4. Comparison of mean Twitter keyword scores

It is clear that all three groups were significantly different ($p < 0.05$) from each other and also that the average Twitter profile keyword score of the group that ResearchImpact follows (RIF = 38.69) is more than double the keyword score of the group that is following ResearchImpact (FRI = 17.8) and both are much greater than that of the Control Group (CG = 4.31). It appears that ResearchImpact chooses to follow a group that is not only smaller in number but that is more tightly aligned with ResearchImpact's own interests than those who follow ResearchImpact as judged by the higher keyword score. This supports our hypothesis that keywords are an important means for Twitter users to identify each other and identify membership in an online community of practice based on their self-identified interest in knowledge mobilization.

Keywords in Twitter profiles are thus important as they allow Twitter users to identify other users with self identified like interests. Like interest is the foundation of a community of practice. But then what can these members of this community accomplish? How can we evolve a Twitter-based KMb community of practice into a group that supports KMb and collaborations? We have yet to use Twitter to broker relationships between researchers and decision makers; however, we are developing closer ties with some Twitter followers as illustrated by the following example.

@KTExchange (the above mentioned RIA project at University of Texas School of Public Health) has been tweeting since July 7, 2009. They have 152 followers and follow 55 as of October 14, 2011. York's KMb Unit has been tweeting as @ResearchImpact since May 1, 2009. We have 1632 followers and follow 325 as of October 14, 2011. @ResearchImpact and @KTExchange follow each other. We began a more in depth relationship by commenting on each others' blogs and exchanging on those comments using Twitter. Our comments were mostly about the Canadian and US KMb experience. We were invited by @KTExchange to participate on a panel at the CDC National Conference on Health Communication, Marketing, and Media (Austin, Susawad and Phipps 2011) and only weeks before the conference did we connect by phone and then in person at the conference. This presentation

has led to co-publishing blogs and a formal collaboration is under development. In this case, Twitter identified a common interest that grew into an online collaboration that resulted in collaborating on a conference presentation and now is a collaboration supporting KMB practice in Toronto and Houston.

5.4 Establishing communities of practice and mobilizing knowledge through social media

Pick (2009) uses the concept of the four C's of social media to describe their use. Users develop **Content** within a given **Context**, i.e. specific applications and tools such as blogs, wikis or Twitter, to make **Connections** with others who share a similar interest; leading to **Conversations**; and when using social media for knowledge mobilization, we suggest that this model could be extended to include a fifth C- **Collaboration** as shown in Figure 5.



Fig. 5. The Five C's of Social Media: Adapted from Pick (Pick 2009)

The connections, conversations and collaboration aspects of social media work together to help establish Communities of Practice (CoP) online and support the social nature of KMB. Wenger defines CoP as "groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly" (Wenger 2006). Social media tools, such as Twitter, provide CoP with the ability to connect, share and interact on a regular basis, even if they can't meet in person. The concept of CoP is important to KMB as demonstrated by Cupp that operates on a CoP model (Hart and Wolff 2006).

In order to successfully share, mobilize and co-create knowledge within CoP, it is necessary to establish trust, reciprocity and relational ties, along with a shared vision, norms (Li and Li 2010) and sense of community (Sangwan, Guan and Siguaw 2009) between members. These

are all important aspects required for successful KMb and these elements can be seen in Twitter communities:

- Trust is gained by being a reliable and respected source of information;
- Reciprocity comes in the form of retweeting others' tweets;
- Relational ties are established by following others tweets and by being followed. Both strong and weak ties are present- some community members will be people you know in real life or others will only be known to you online;
- Shared vision, norms and sense of community come from using the tool itself. Those who are active on Twitter know how it works and agree to the rules simply by using it.

Also important to KMb is the presence of knowledge intermediaries or boundary spanners (Tortoriello, Reagans and McEvily 2011). These are individuals who are involved in multiple communities and who can transfer knowledge and help develop relationships across groups. In institutional knowledge mobilization units, like York's KMb Unit, knowledge brokers act as boundary spanners both in real life and online.

York's KMb Unit uses social media and specifically Twitter to disseminate and exchange information. We connect to others who share similar interests and form ties with individuals and organizations because of a mutual participation in these social media. Social media are tools for knowledge brokers and can help span boundaries. We hypothesize that we are better brokers because we use social media tools, but these tools will always supplement - not replace -knowledge brokers who are central to KMb.

Key messages:

- More research is needed to understand how social media can be used to mobilize social science research
- Social media can be used to disseminate and exchange research and knowledge
- Social media, especially Twitter, can help to connect individuals sharing a common interest and thus support a community of practice.

6. Conclusion

This chapter has drawn from the literature to show how KMb and related activities are social processes. These processes include how the social sciences and humanities along with other organizations and institutions attempt to address some of the ongoing *wicked problems* and more general problems in society to create greater social benefit. The chapter has shown how these processes benefit from interactive methods of KMb that focus on the relationships between researchers and decision makers, as well as how KMb is emerging as an institutional capacity that includes the use of knowledge brokers supported by social media. We illustrated these concepts with examples from Canada, the US and the UK and provided details about York University's institutional KMb support services. The stories from York's KMb practice illustrate that KMb is a process that results in social innovations. We then presented the case and some preliminary evidence to show that social media, especially with the use of Twitter, are tools that have the potential to support the social processes of KMb.

We will close with three predictions for the future development of KMb.

1. KMb will continue to develop at the institutional level:

Sandra Nutley observed four years ago that “the evidence that we have about developing effective organisational – and system – level research use strategies, while emerging, is still fairly thin on the ground (Nutley, Walter and Davies, 2007). York University, University of Edinburgh, University of Brighton and University of Texas School of Public Health have all made investments in institutional knowledge brokering. In the same way that almost all universities have developed a capacity to support technology transfer and commercialization we predict that universities will invest in KMb services that will support the co-production of knowledge by university researchers and their research partners from the community, government and private sectors.

York University leads ResearchImpact-RéseauImpactRecherche (RIR), Canada’s KMb network. RIR is a pan-Canadian network of six universities¹ who have all invested in knowledge brokers and an institutional capacity to support KMb for faculty, students and their local research partners. Such networked KMb has the potential to grow institutional KMb into a system of KMb. System’s level KMb will allow sharing of best practices, professional mentoring and has the potential to make research from one jurisdiction in the system accessible to decision makers in another jurisdiction.

2. Social media will evolve as a tool to broker relationships between researchers and decision makers:

Many organizations are moving from experimenting with social media to embracing social media as part of their business. We illustrated above that Twitter can support a community of practice and KMb collaboration. As more research and decision maker organizations adopt social media we anticipate that these tools will evolve from tools that disseminate information to tools that support collaboration and engagement. Despite this predicted adoption of social media, we anticipate that social media will become tools that will complement but not replace knowledge brokers.

3. Knowledge brokering will evolve as a profession:

Many organizations, some of them described in this chapter, have created professional knowledge broker positions to link research to policy and practice. Where there is critical mass, these local knowledge brokers are forming communities of practice. One example is the Ontario Knowledge Transfer and Exchange Community of Practice (www.ktecop.ca). The Toronto-based KTE CoP is funded by a grant from the Canadian Institutes of Health Research, has more than 300 members, has a social media presence through its blog and holds regular professional development meetings. Another example is the Knowledge Brokers’ Forum (<http://www.knowledgebrokersforum.org>) which is an online community of practice for knowledge brokers in the field of international development.

As the profession of knowledge brokering grows there will increasingly be opportunities for professional exchange among knowledge brokers. On December 7,

¹ Memorial University of Newfoundland and Labrador, Université du Québec à Montréal, York University, University of Guelph, University of Saskatchewan, University of Victoria

2011 the London School of Economics is hosted a knowledge brokers and knowledge intermediary workshop titled *Bridging The Gap Between Research, Policy and Practice: The importance of intermediaries (knowledge brokers) in producing research impact* (<http://www.genomicsnetwork.ac.uk/cesagen/events/title,24718,en.html>).

Knowledge Mobilization Works (www.knowledgemobilization.net) is an Ottawa-based consulting firm that is organizing the *Canadian Knowledge Mobilization Forum* in June 2012. These conferences and workshops will help to build the profession of knowledge brokering.

In 2012, we see knowledge mobilization embedded within research projects, research units and research institutions. KMb is developing as a profession in many disciplines. Knowledge brokers are networking locally and nationally and national systems of KMb are forming. In 2007, Sandra Nutley concluded that evidence for organizational and systems level KMb was only beginning to emerge. What a difference five years makes. As our world is now part of a social network of knowledge and innovation - we look forward to being part of the next five years of knowledge mobilization.

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